RISK-BASED CAPITAL STANDARDS AND THEIR IMPACT ON THE MARKET FOR BANK CONTROL

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This empirical work examines the risk-based capital standards and how its treatment of goodwill could impact a bank's decision process when acquiring other banks. This decision will be represented by which one of the two accounting conventions the bank chooses. This decision, which will serve as the dependent variable, is qualitative and categorical in nature since the response can be either one or the other. Therefore, logit analysis will be used to measure the statistical impact of the selection of the accounting method by the particular bank. In order to truly answer this question, the decision must be isolated so as to capture the impact of the regulation. This is accomplished by the use of an indicator variable representing before and after the standards. This dissertation also explores the question of whether or not it is the accounting convention or the method of payment that is the important factor in the bank merger decision. The purpose of this work is to provide a starting point to the process of providing empirical answers to this regulatory question. Overall, the results are mixed.

CHAPTER 1
INTRODUCTION

This paper attempts to determine whether or not recent regulation has had an effect on bank mergers. Specifically, this empirical work examines the risk-based capital standard and how its treatment of goodwill could impact a bank's decision to acquire other banks. This decision will be represented by the accounting convention that the bank chooses, since goodwill is only relevant with one of the conventions. If they use purchase (to be defined later) then goodwill is an issue, however, with pooling-of-interests it is not. Pooling does involve several requirements. So, banks desiring to facilitate mergers must deal with a complicated decision process. If they utilize the non-goodwill aspect of the pooling-of-interests method, then extensive preparation would be necessary. If not, then goodwill could significantly impact the bank's capital.

This issue is important because if U.S. banks are to compete globally, the industry must be strengthened. Bank success in other parts of the world generally stems from a few large and powerful banks. This being the case, our current system of many small, local banks can benefit from acquisition activity. This problem could be intensified if it gets to the point where bank merger decisions become driven by regulatory and accounting factors as opposed to economic variables. With these implications in mind, this is definitely a question worth answering empirically.

An attempt will be made to answer this important empirical question by focusing on the decision by an acquiring bank to select either the purchase method of accounting or the pooling-of-interests method. It must be noted that this decision, which will serve as the dependent variable, is qualitative and categorical in nature since the response can be either one or the other. With that in mind, logit analysis will be used in this paper to measure the statistical impact of the selection of the accounting method by the particular bank or bank holding company. It must also be noted that in order to truly answer this question, the decision must be isolated so as to capture the impact of the risk-based capital standard regulation. In other words, steps will be taken to analyze the decision by a bank to choose purchase or pooling both before and after the regulation.

In the chapters that follow, background is provided, relevant literature is reviewed, methodologies are examined, statistical results are analyzed and conclusions are provided. Specifically, the rest of the paper is organized as follows. Chapter 2 provides an overview of the risk-based capital standards. Chapter 3 discusses goodwill and its potential implications for banks engaging in acquisition activity. Chapter 4 reviews extensive literature that is both directly and indirectly related to the issue at hand. It begins with an overview of mergers and acquisitions in general, continues with an exploration of the specific literature pertaining to bank mergers and concludes with a look at how information economics plays a role in acquisition activity. Chapter 5 examines the methodology that is employed and why. Data is described in chapter 6. Results are presented in chapter 7 and chapter 8 concludes.

CHAPTER 2
THE RISK-BASED CAPITAL STANDARD: AN OVERVIEW

The forerunner of the risk-based capital standards was the Basle Proposal on Risk-Based Capital Adequacy Standards, December 1987. The final agreement, signed in Basle, Switzerland, in July of 1988, was the final product of the Committee on Banking Supervision of the Bank for International Settlements. This committee, sometimes referred to as the Cooke Committee, after Peter Cooke, chairman and associate director of the Bank of England, consists of bank officials from the Group of Ten countries (Belgium, Canada, France, Germany, Italy, Japan, Netherlands, Sweden, Switzerland, United Kingdom, United States) and Luxembourg. (Federal Register, 1989). Domestically, the Federal Reserve governors approved the Basle agreement by a vote of 5 to 1 on August 3, 1988. Final regulations by the Federal Reserve were approved on December 16, 1988. These regulations did not differ in any way from the Basle agreement. The Office of the Comptroller of the Currency and the Federal Deposit Insurance Corporation issued capital regulations for nationally chartered banks and non-member state chartered banks, respectively. All three sets of rules were issued in early 1989. Since this work revolves around acquisitions, and bank holding companies do most of the acquiring, it is important to note that these standards also apply to bank holding companies (Federal Reserve Press Release 1989).

Capital is defined in an accounting context as the cumulative book value of assets minus the cumulative book value of liabilities. Regulators, however, define bank capital in a manner that serves to protect the funds of depositors. Bank capital loosely consists of common equity plus some forms of long-term debt.

Before the 1980's, there was no explicit capital requirement in the United States. If regulators were concerned about low levels, they would simply force an individual bank to raise its capital. Beginning in 1981, different regulators enacted different capital level requirements. In 1985, bank capital ratios were at an all-time low, so a requirement was created that made a distinction between primary and secondary capital and provided consistent adequacy-levels among all U.S banks. Primary capital consisted of shareholder equity, perpetual preferred stock, loan loss reserves, mandatory convertible debt and minority interests in subsidiaries. Limited life preferred stock and subordinated notes and debentures made up secondary capital. The explicit minimum requirements were 5.5% of assets for primary capital and 6% of assets for total capital (primary + secondary). Primary capital definitions make no mention of goodwill which means that goodwill was not deducted from the capital numerator prior to these standards, a point to be explored later.

During the 1980's, capital did increase a fractional amount, but banks took on riskier loans, so overall bank risk continued to increase. Another factor contributing to higher levels of banking industry risk was the use of "off-balance sheet activity". These items were not subject to capital constraints because they were not formally entered on the balance sheet, yet they exposed the banks to risk. Letters of credit,

loan commitments, swaps and foreign exchange contracts serve as examples of "off-balance-sheet" items.

Risk-based capital standards' focus was in part to address the concerns of regulators about bank riskiness. These standards address several important concerns. First, as just mentioned, they provide a means for regulation to help ensure safety among banks. Higher levels of capital give regulators the time and the mechanism to pinpoint problem banks and solve the problem early. Second, these standards help to reduce the moral hazard problem that emerges in banking relationships. Since bank creditors are protected by outside agencies, managers are not subject to normal creditor constraints and, therefore, may have incentives to take on more risk. The standards impose a cost on risk-taking behavior in the form of increased capital costs. Third, the regulations should be consistent across international boundaries to remove any competitive advantages enjoyed by banks in countries operating under loose regulation and fourth, capital must be defined in such a way that the correct items are included and the selected items truly serve as a buffer to support losses. Thus, there are in general four theoretical objectives of the risk-based capital standards:

1. To reduce the risky banks' chances of failing without driving up the safe banks' cost of funds.

2. To reward banks for shifting to safer activities.

3. To standardize capital requirements worldwide, thereby preventing loose national regulatory standards from conveying a competitive advantage in international markets.

4. To redefine qualifying "capital" items in such a way that enhances and standardizes banks' abilities to absorb poor outcomes.

There are basically three parts to the new regulation. First, capital is redefined. The breakdown is no longer between primary and secondary, but now it is classified as Tier 1 and Tier 2. The current rule states that Tier 1 capital will consist of the following items: shareholder equity, perpetual preferred stock and minority interests in subsidiaries less goodwill. Tier 2 is now made up of loan loss reserves up to a maximum of 1.25% of risk-weighted assets, convertible debt, limited life preferred stock and subordinated debt instruments, where preferred stock and debt are only allowed a combined maximum amount of 50% of the level of Tier 1.

The second part of the regulation is the risk-based capital requirement. This is the most important part of the rules because it links a bank's capital to its credit risk. Capital is required for 0, 20, 50, or 100 percent of an asset's face value depending on the riskiness of the particular asset. A bank's credit risk from off-balance sheet activities is treated similarly. The face value of each off-balance sheet instrument is converted to an on-balance sheet "credit equivalent" which represents the bank's credit exposure. Risk-adjusted or risk-weighted assets are calculated by taking the sum of balance sheet assets weighted by the relevant risk plus the off-balance sheet items converted into weighted credit equivalents. The category breakdown is as follows. Category 1 is 0% which contains items that virtually have no default risk such as cash, government securities and gold bullion. Category 2 is 20% which contains assets that have a positive, but very low default risk such as interbank deposits, accounts receivable, agency securities and general obligation municipal bonds. Category 3 is 50% and contains assets such as municipal revenue

bonds and first mortgages on homes. Category 4 is 100% and contains any other securities and loans not covered by the above categories.

The final part of the new regulation is referred to as the leverage requirement. This concept is basically similar to the minimum capital to asset ratio implemented in the 1980's. This new part of the plan will place a floor on bank capital in the form of a minimum ratio of capital to assets that all banks must adhere to. It is important to note that this portion of the standards is separate from the risk-based standard. Since risk-weights can be at most 100% and at lowest 0%, it is possible for a bank to have its risk-weighted assets fall below its total dollar assets. (For example, a bank could hold all cash and government securities which would yield risk-weighted assets of 0). This loophole could be manipulated by a bank so as to hold little or no capital. But this would be inappropriate since a bank could hold extremely small amounts of capital while still meeting the ratio requirements, simply because of its manipulation of the denominator in the capital fraction. To address this concern, the leverage requirement ensures that banks meet at least a 3% ratio of Tier 1 capital divided by total assets (not risk-weighted). The idea here is to put a floor on the amount of equity available to absorb risks other than credit risk.

The new levels of risk-based capital ratios began a phase-in starting in December of 1990 with full implementation occurring in December of 1992. The minimum standard of Tier 1 capital to risk-weighted assets was changed to 3.625 percent as of December 1990 with the full phase-in level of Tier 1 capital to risk-weighted assets reaching a maximum of 4 percent in December of 1992. The

minimum standard of total capital (Tier 1 + Tier 2) to assets was changed to 7.25 percent as of December 1990 with the full phase-in level reaching 8 percent in December of 1992. Phase-in also occurred with the other provisions of the risk-based capital standards.

As far as goodwill is concerned, a description of its treatment within the risk-based capital standards will now be provided although an explicit definition will be postponed until the next chapter. It was stated earlier in this chapter that a redefinition of capital serves as one of the objectives of these regulations. The redefinition includes deductions of certain assets from the capital amount used to meet regulatory requirements. One such asset is goodwill. (An exception to this rule exists for goodwill acquired through the mergers of failed financial institutions). To sum, any goodwill created after 3/12/88 carried on the balance sheet of a bank or bank holding company (excluding the above exception) will be deducted from its Tier 1 capital by regulators when determining the appropriate capital ratio.

The rationale behind the goodwill deduction stems from the fact that the market value of intangible assets is often difficult to determine. In many situations, when a bank's financial condition diminishes, the value of intangibles decreases as well. This is the time when a bank is most in need of the "cushion" that capital is to provide. With that in mind, regulators feel that intangible assets cannot provide the type of safety needed during times of financial struggle and, therefore, should not be counted for capital adequacy purposes.

CHAPTER 3
AN EXPLORATION OF GOODWILL

The Accounting Concept of Goodwill

A discussion of goodwill must begin with a description of the concept of the "intangible" asset. To compare, plant assets are tangible assets that have physical substance. Those resources which lack physical substance but yet still provide gains to a particular firm are characterized as intangibles. Formally, intangibles are defined as resources that represent future benefits that are expected to flow from current expenditures. Most intangibles can be identified separately. Some examples are copyrights, trademarks, patents and franchises. Goodwill, on the other hand, represents several factors that cannot easily be pinpointed. Thus, goodwill is classified as an "unidentifiable intangible asset".

Goodwill has been an integral part of recent merger and acquisition transactions. For example, in 1985, Philip Morris, Inc. acquired General Foods Corporation for $5.8 billion. This transaction consummated goodwill of approximately $2.8 billion. The General Motors acquisition of Hughes Aircraft generated $4 billion of goodwill and the purchase price was only $5 billion. Goodwill can be defined as the excess of purchase price above and beyond the fair market value of identifiable net assets where net assets are defined as total assets minus total liabilities.

Therefore, it is clear that some subjectivity must be utilized to determine first of all what the fair market value is and second, how much in excess must be paid. In some cases, an outside appraiser seeks to make decisions on the value of existing target firm assets. In other cases, members of the acquiring firm that are astute in merger and acquisition transactions make this determination. The bargaining interaction between buyer and seller may also impact the level of goodwill. Goodwill is recorded as an asset on the balance sheet because it symbolizes the favorable characteristics of an acquired firm which cannot be identified and valued. Examples of such characteristics include but are not limited to:

1. Outstanding sales team
2. Weak competitors
3. Effective advertising
4. Unknown manufacturing process
5. Good labor relations
6. High credit rating
7. Outstanding training program
8. Strategic location
9. Favorable tax conditions
10. Favorable government regulation

(Catlett and Olson [1968]) pg 17-18

Treating Goodwill in Accounting for a Business Combination

Now, to explore goodwill's role in the average merger and/or acquisition transaction, we need to look at the two generally accepted methods of accounting for business combinations. The two types are the pooling-of-interests method and the purchase method. Whether the transaction is set up as a merger or an acquisition,

one of these two methods must be employed. In other words, either an acquisition or merger can be set up as a purchase or pooling. Generally speaking, a purchase transaction implies that one of the firms involved emerges as the dominant or controlling interest by acquiring the assets and assuming the liabilities of the target. However, in a pooling transaction, the financial statement impact entails that the balance sheet amounts from both firms are simply added together.

Pooling rests on the assumption that ownership interests can be united by the exchange of securities without an actual acquisition or combination of the two entities. Theoretically, it is assumed that the two firms are simply united and that they remain relatively unchanged from an "accounting" perspective. There exists no purchase price (the price paid for the target firm) and no new accounting basis (the market value of the assets acquired) on the books of the new entity. The assets and the liabilities of each company are simply added together at their respective book values. Pooling is defined as an exchange of the common stock of the acquiring firm for at least 90% of the common stock or all of the net assets of the target firm. The Accounting Principles Board's objective is to prevent the use of pooling for those transactions that do not fit into the pooling concept. Originally, the distinction between purchase and pooling was so sketchy that management's selection was usually motivated by the choice that would yield the most favorable financial reports. Thus, the Accounting Principles Board was driven by an objective to create a precise set of criteria to make the distinction between the two. Therefore, this method is only applicable when the following twelve conditions are met:

(1) The combining companies have been autonomous for at least two years.

(2) The combining companies are independent of each other.

(3) The transaction must be completed within one year.

(4) Common stock must be offered for 90% or more of the target's shares.

(5) Each of the combining companies must maintain the same voting common stock interest as before the merger.

(6) Neither of the companies reacquires shares of stock for any purpose other than for business combinations.

(7) The ratio of shares held by an individual common stockholder to those of other stockholders remains the same after the transaction.

(8) The stockholders of either corporation are neither deprived nor restricted in exercising their voting rights.

(9) The combination is resolved at the date the plan is consummated and no provisions of the plan relating to the issue of securities or other considerations are pending.

(10) The combined corporation does not agree directly or indirectly to retire or reacquire all or part of the common stock issued to affect the combination.

(11) The combined corporation cannot enter into any financial arrangement which negates the exchange of equity securities.

(12) The combined corporation cannot dispose of a significant part of the assets within two years.

The purchase method assumes that the merger/acquisition transaction is one in which one entity acquires the net assets of another entity. All those business combinations that do not meet the conditions for pooling must be recorded as a purchase. The major difference between purchase and pooling is that with purchase,

the assets and the liabilities of the target firm are recorded on the balance sheet of the acquiring firm at their fair market values. The acquirer's cost is measured by the level of cash paid or the fair value of the securities issued. This cost is allocated to identifiable assets minus liabilities and any excess cost over the fair value is allocated to goodwill. Thus, goodwill is a concept that is only relevant under the purchase method; no goodwill is generated under the pooling-of-interests.

To provide additional insight, let us take a closer look at the issue of accounting practices for business combinations. Since business combinations are complex financial transactions that can involve enormous economic implications, the manner in which they are recorded is and has been a serious issue for the accounting profession. Historically, the pooling-of-interests method became accepted in 1950 by way of the Accounting Research Bulletin (ARB) No. 401 put forth by the Committee on Accounting Procedure. One of the objectives of this committee was to provide an alternative to the current practices at the time. The idea was that since combinations involved so many financial interests, alternate accounting practices should not be neutral or perfect substitutes. At present, the choice is between the two generally accepted methods, purchase and pooling, as currently outlined in APB Opinion No. 16.

Although goodwill is recorded on the acquirer's books as a positive asset, it must be amortized by the acquiring firm and charged against income for a period not exceeding 40 years. The rationale is that those unidentifiable factors that create goodwill will disappear gradually, thus, goodwill should be amortized gradually. The

implication is that earning levels are decreased by the amount of the annual goodwill write-off. This write-off adversely affects income but does not provide a tax advantage. According to Beam (1992), the cost of goodwill is not a deductible expense for tax purposes. This reduction in income could be a disadvantage to firms using the purchase method of accounting because post-acquisition income levels could be much too low as a result of the goodwill write-off.

Purchase accounting's impact on income appears to make the pooling method preferable. However, the trade-off is twofold. First, firms often experience difficulty meeting all twelve of the stringent requirements necessary to justify a pooling transaction. Second, purchase accounting appears to paint a truer picture of the combined entity's worth since assets are recorded on the books at their fair market value.

To provide an example focusing on the difference between these two accounting methods for any two firms, assume that the Raider Company acquires Target Industries. The simplified balance sheet in Table 1 shows total assets, total liabilities and total equity in order to illustrate the impact of mergers and acquisitions on goodwill. Prior to acquisition, Target has total assets of $4 million and total liabilities and equity of $2 million each. Assume that Raider purchases Target for $5.5 million. Further assume that Raider raised the funds necessary to make the acquisition through an issuance of debt (a practice common in today's acquisition market). An outside appraiser sets the fair market value of Target's assets as $5 million (compared to the $4 million book value).

With pooling, the assets of the combined firm appear on the books at the exact same value that they had on the pre-acquisition books of both firms. Each item from each firm's balance sheet is simply added together. Note that with pooling, the assets, liabilities, and equity are unchanged by the acquisition. The $5.5 million purchase price does not appear and no goodwill is created. However, with purchase accounting, the new asset value consists of the $30 million value of Raider combined with the market value of the assets acquired. The difference between the price paid and the value of the assets purchased constitutes goodwill ($5,500,000 - $5,000,000 = $500,000). Although the equity account remains unchanged since Target's equity is wiped out with the purchase, the new debt level consists of the $15 million before this transaction and the $5.5 million debt-funded purchase price.

Table 1
Acquisition Accounting for Both Methods

	Before Merger		After Merger (Combined Entity)	
	Raider	Target	Purchase	Pooling
Assets	$30,000,000	$4,000,000	$35,000,000	$34,000,000
Goodwill	0	0	$ 500,000	0
Total Assets	$30,000,000	$4,000,000	$35,500,000	$34,000,000
Liabilities	$15,000,000	$2,000,000	$20,500,000	$17,000,000
Equity	$15,000,000	$2,000,000	$15,000,000	$17,000,000
Total Liabilities and Equity	$30,000,000	$4,000,000	$35,500,000	$34,000,000

(In Thousands)

Table 2 reports the number of firm combinations that used pooling and purchase respectively, for each of the years 1979 through 1992. Table 3 provides the same information in percentage terms. The business combinations included were derived from an annual survey of 600 major companies. This survey, executed by the American Institute of Certified Public Accountants, compiles data from the stockholder annual reports of the surveyed firms. It would appear that purchase has since 1979 been the dominant choice for these acquiring and merging firms.

Table 2

The Accounting Choice Decision by 600 Surveyed Acquiring Firms

	'92	'91	'90	'89	'88	'87	'86
Pooling of interests	17	16	10	18	14	21	13
Purchase method	182	160	190	219	216	194	239

	'85	'84	'83	'82	'81	'80	'79
Pooling of interests	10	12	11	24	30	34	39
Purchase method	200	194	154	145	156	159	185

(Accounting Trends & Techniques [1993])

Table 3
Acquisition choice by percentage breakdown

Year	Number of mergers	Percentage Purchase	Percentage Pooling
1979	224	94%	17%
1980	193	82%	18%
1981	186	84%	16%
1982	156	86%	14%
1983	165	93%	7%
1983	210	94%	6%
1980	210	95%	5%
1986	252	95%	5%
1980	215	94%	14%
1988	230	94%	6%
1989	237	92%	8%
1990	200	95%	5%
1991	176	91%	9%
1992	199	91%	9%

(Adapted from previous table)

Goodwill and the Risk-based Capital Standards: The Implications

Goodwill is defined in the Federal Reserve's risk-based capital standard regulations printed in the Federal Register as "an intangible asset that represents the excess of the purchase price over the fair market value of tangible and identifiable assets acquired in acquisitions accounted for under the purchase method of accounting." (Department of the Treasury: Federal Register, Volume 54, No. 17, January 27, 1989 "Rules and Regulations") In the Federal Register's section on deductions from capital, the following rule applies. All unidentifiable intangible assets, such as goodwill, are deducted from Tier 1 capital before the Tier 2 portion of the calculation is made. This ruling applies to all new goodwill created after March 12, 1988. Any goodwill existing on the bank's books before that date would be grandfathered. The only exception to this goodwill rule exists for supervisory mergers of problem or failed institutions. This exception is granted on a case by case basis by the relevant regulatory authority.

There are essentially three issues that need to be addressed in reference to this portion of the ruling. First, what is the true objective behind this rule? The original Basle Agreement stated "as a general rule, banking organizations should maintain strong tangible capital in relation to weighted risk assets." The rationale behind this judgement most likely stems from a feeling that intangibles included as capital may not help to absorb potential losses.

Second, what about the treatment of goodwill in relation to other types of intangible assets? It is not clear why other types, such as leaseholds, core deposit

values and mortgage servicing rights are not also deducted. These intangible assets are monitored by the relevant regulatory bodies. The answer could lie in that fact that goodwill is oftentimes classified as an "unidentifiable" intangible asset. The adjective unidentifiable implies that what separates goodwill from the above mentioned intangibles is the fact that it is difficult to ascertain actually how, what and where the benefits from goodwill actually come from.

The third and most important issue is goodwill's potential impact on bank mergers. In recent years, there has been considerable merger activity in the corporate arena and the banking industry has been no exception. The demand for potential target firms has been such that it is extremely common for large premiums over fair market value to be paid in merger transactions. This being the case, goodwill in acquisition activity is a relevant factor. The implication for commercial bank mergers is that under these standards, goodwill deducted from Tier 1 becomes an expensive commodity for acquiring banks. Goodwill becomes an expensive commodity, since in the event that an acquiring bank generates goodwill in a business combination, the deduction of goodwill will reduce the amount of Tier 1 capital eligible for capital regulations. From the previous example, if purchase accounting is utilized, then the Tier 1 capital amounts of the combined entity would be the following before and after the standards.

Tier 1 capital (Before RBCS)	=	15,000,000/35,500,000	= 42.25%
Tier 1 capital (After RBCS)	=	[15,000,000 - 500,000]/35,500,000	= 40.85%

The point here in this early example is that capital levels will decline as a result of the goodwill treatment. A clearer picture of the implication for acquiring banks will be painted momentarily. The bank confronts a trade-off between expanding its asset growth by acquisition versus internal growth. If the acquisition generates goodwill, the bank's leverage constraint will probably lead to less lending due to the decrease in regulatory capital. This goodwill impact can become a catch-22 for active acquirers in the banking industry.

The issue of goodwill, of course, is only relevant when purchase accounting is the method employed. Utilizing the alternative method, pooling-of-interests, would require adherence to the twelve strict guidelines spelled out for pooling transactions. Banks could instead use the purchase method of financing and attempt to avoid paying a premium over fair market value for the target bank in question. Given today's merger market, this is an unrealistic strategy. Essentially, if a bank is unable to qualify for pooling, goodwill will be generated, Tier 1 capital will be consumed and the bank could subsequently be in jeopardy of falling below the minimum standards.

To provide an example, suppose an acquiring bank has the following segment on its balance sheet.

Common stock	$ 502,000
Surplus	$1,121,000
Retained Earnings	$5,059,000
Total capital	$6,682,000

Further assume that this bank has total risk-weighted assets of $144,632,000. Without the goodwill rule, Tier 1 capital would be 4.62%, above the 4% post-1992

minimum.

$6,682,000/$144,632,000 = 4.62%

Also assume that this bank's acquisition transaction consummated goodwill of $990,000. Under risk-based capital, this bank's Tier 1 capital to risk-weighted assets would only be 3.9%, below the regulatory minimum.

$6,682,000 - $990,000 = $5,692,000

$5,692,000/144,632,000 = 3.9%

Given these implications, the question now becomes, what effect will this part of the ruling have on bank merger activity? If the incentive to use purchase accounting is reduced by these regulations, then for merging banks, the only other alternative is to structure the transaction as a pooling-of-interests. Trade-offs occur with the use of pooling for several reasons. The most obvious is that the twelve conditions make it difficult to qualify. Another possible concern occurs for banks because the target must be paid for through the issuance of stock. From a bank's perspective, the cost of equity is higher than the cost of other forms of capital. So, given a particular purchase price, coming up with enough equity to pay for targets could be a potential problem. So, if a bank finds that its capital level will be too hard hit by the unavoidable reduction in capital caused by goodwill, and this same bank finds difficulty qualifying for pooling, these regulations could serve as a disincentive to merge or acquire. A perusal of governmental and academic sources yields similar reactions to this question. A Federal Reserve Board memo in response to bank criticism of the goodwill rule stated "banking organizations opposed the treatment of

goodwill because the deduction would hamper the process of domestic banking consolidation by effectively eliminating purchase accounting as a viable method for mergers and acquisitions."

Leonard Wyderko, Jr. claimed that "the capital guidelines would slow merger activity because goodwill will become so expensive that banks will have to alter the way they structure mergers and acquisitions. Most transactions will likely be structured as pooling-of-interests rather than purchase." (1989)

Raj Bhala writes that "U.S. banks must be allowed to merge in order to meet competitive challenges from Japanese and other foreign banks. Denial of Tier 1 is a disincentive to use cash in a merger or acquisition." (1989)

Michael P. Esposito, Jr., Executive Vice President and Chief Financial Officer for the Chase Manhattan Corporation predicted that the new guidelines would change many of the ways that banks do business, including acquisition activity. He states, "Acquisitions are not encouraged by these regulations...unless their stock is selling well above book value, banks at the margin, will be discouraged from acquisitions. Moreover, non-bank competitors and some foreign banks will have considerable advantages over banks in bidding wars over target firms. The elimination of goodwill from Tier 1 may cause serious problems." (1989)

As stated by Osborn and Evans (1988) "...the treatment of goodwill in the new regulations will inhibit bank merger and acquisition activity in America, thereby impeding the construction of nationwide banks which enjoy the economies of scale to compete with Japanese banks. Conversely, it might encourage the acquisition of

large parts of the U.S. banking system by foreign banks."

The quoted responses reflect the view that not only will bank merger and acquisition activity be affected, but that there can be societal costs associated with that happening. Larger banks can enjoy the economies of scale necessary to strengthen U.S. banking worldwide. Active acquisition activity serves to create the competition necessary to reduce the large number of banks and increase the strength of the overall banking industry. An additional problem could occur because bank management's merger and acquisition decisions may be driven by regulatory and accounting factors as opposed to economic variables. The consistency of these responses reinforces the idea that determining if these regulations have had an impact on the bank merger market is a question worth answering empirically.

CHAPTER 4
LITERATURE REVIEW

This literature review spans several distinct areas while providing a logical progression toward the question of how these regulatory changes affect bank mergers. For the purpose of this dissertation, once various issues surrounding mergers in general are explored, the specific area of bank mergers will then be considered. Since bank mergers are a subset of all mergers, the theories and questions concerning acquisitions must be dealt with initially so that bank mergers can be placed in its proper perspective. The literature review proceeds as follows. The first section explores the theories and research concerning mergers and acquisitions in general. The next section analyzes bank mergers and the recent research relevant to them. The final section describes how signalling theories affect merger analysis.

Mergers and Acquisitions

Lev (1984) presents his findings and opinions on the merger and acquisition phenomenon in general. He begins by examining the trends. In seminal works, the prevailing theory was that mergers were associated with booms in the economy. The merger waves of the 1970's and early 1980's definitely contradict this view, being that the economy was in recession. The trends have moved toward conglomerates in recent times. Early in merger history, specifically in the 1950's and 1960's, about forty percent of mergers were conglomerate in nature whereas at the time of Lev's writing, about eighty percent were. Another trend is the dramatic increase in the

premiums paid over the fair market value of target firms. Premiums in earlier periods fell between fifteen and twenty percent. Today, they can be fifty percent or higher.

The most interesting subject discussed presents theories to explain the motives that drive these mergers. Our author breaks them down into three general incentives: synergy, target undervaluation and managerial motives. Synergy simply implies that the value of the newly created firm is worth more than the sum of the two existing values. These synergistic benefits can also be divided into two components.

The first addresses short-term concerns like liquidity. By acquiring firms with excess cash they can, in a sense, get cash quick. Our author poses the valid question of why firms with this desire could not go to the capital market directly. An underhanded short-run strategy is the alleged use of mergers to acquire companies with low price earnings ratios in an effort to artificially increase earnings per share and subsequent stock price. A final short-term motivation comes from the benefits derived from the increased tax shields that depreciation on acquired assets yield.

The second example of motivation by synergy is called operating synergy which, as the name implies, affects the everyday operations of the firm. Some examples are economies of scale, limiting competition or product extension. Theorists have suggested that in an industry facing stagnant growth, merger provides a medium to branch out into other areas. Our author questions the rationale behind paying large premiums to achieve this goal, when a firm could very well diversify on

its own.

The second set of corporate motives for takeovers focuses on the undervaluation of target companies. If there was a substantial differential between the market value of a firm and the true replacement costs of its assets then it would be beneficial for an acquirer to purchase this firm for the use of its assets, as opposed to buying those same assets directly. The dilemma here is that if the theory of market efficiency holds, then these firms should be priced correctly.

An explanation that is not inconsistent with the market efficiency deals with asymmetric information. If a bidding firm possesses inside information, then undervaluation of a firm would be verified and the motive for merger would be legitimate. A final explanation for undervaluation could stem from the presence of incompetent managers. If this is the case, then mergers play an important role in allocating resources to more efficient means.

The last explanation focuses on the self-interest of the manager. This theory, of course, is an offshoot of agency theory and proposes that a manager may not be making decisions solely on the basis of stockholder wealth maximization. These motives could stem from the need to satisfy a sense of power by increasing the size of what he is in control of. It could also be used to gain access to insider trading or to simply increase his compensation.

The analysis of these theories was first addressed in the 1960's. Investigations were either disaggregated or aggregated in nature. The former looks to see if specific motives are met, whereas the latter looks to see if the total value of the new firm

increases. Results of tests of this nature did not show a substantial increase in profitability. But, this result could stem from the method of testing. That outcome was based on data from financial statements.

Current research addresses this issue by looking instead at takeover activity's impact on stock price. By focusing on the change in share price that can be attributed to merger, the abnormal return is isolated. These abnormal returns are studied for a long period of time prior to the announcement of merger and some time after. The empirical findings on target firms showed, on average, negative returns before announcement, which could be attributed to the undervaluation of these firms or stated another way, their need to be merged. Interestingly enough, these same firms enjoyed large positive abnormal returns around the announcement which again seems to be consistent with the belief of merger benefit. Acquiring firms generally displayed positive pre-merger returns, which probably represents the fact that firms must be in a position to pay the premiums associated with takeover. The response around the announcement for these firms was however small positive or small negative. The point to be noted from these results is that the losers in these transactions appear to be the acquiring firm's stockholders. For firms enjoying success, does it make sense to pay large premiums when it does not clearly benefit the shareholders? The controversy continues.

Prior to Wansley, Lane, and Yang (1983), earlier research in the takeover literature looked at the returns across merger types and across differing payment methods, but always separately. This is the first work to actually test for differences

in return while controlling for both payment method and merger type. Specifically, the authors are testing the possibility of any abnormal returns enjoyed by the target firm being influenced by the acquisition form and the way in which it is paid for.

Theoretically, it has been thought that the premium paid to horizontal or vertical mergers would be greater than in conglomerates. The intuition is as follows: Synergy is considered to be the primary component inducing success when two firms come together. In a horizontal or vertical merger, the need that the acquired firm is fulfilling for the bidder is usually quite obvious. The synergy is not as apparent in conglomerates. But, empirically, conglomerate mergers have enjoyed slightly higher premiums.

Herein lies the importance of the Wansley, Lane and Yang study. These results could be biased if the method of payment is not taken into consideration. The returns of the sample target firms were tested around the day of the merger announcement. The results of the sample employed display a statistically insignificant difference in return across merger types. Significant differences in abnormal returns did exist, however, across payment types.

Higher returns resulted from cash payments. It seems obvious that the reason for this lies in the tax difference of cash versus security payment. An individual target shareholder receiving payment involving equity securities could defer taxes on any capital gains up until those securities are sold. That luxury does not exist in the cash case, therefore larger premiums offset this opportunity cost. Relating to this issue, the reader may question why the acquirer would not just always choose to pay in

stock to avoid the inevitable larger premium. The decision is not that simple. Selecting stock as a medium of exchange may involve other implications such as the appropriate accounting choice for stock and the current trading value of the security. To recap, major differences in abnormal return do appear to exist when mergers are compared by payment method.

Weston (1983) takes a look at the differences between two different decades of merger waves and proposes his "rules of thumb" to follow for successful mergers. Statistical tests previous to his work showed a relationship between merger activity and the "q ratio". The q ratio is the ratio of the market value of a firm to the replacement cost of its assets. The interesting paradox is that this relationship has been almost reversed from the 1960's to the 1970's.

Merger activity during the sixties was stimulated by higher q ratios and rising stock prices of target firms. This result can best be explained by the fact that most of the conglomerate mergers were based in defense and aerospace industries, high growth areas. Thus, the motivation stemmed from bidders seeking growth in a strong economic industry.

Conversely, in the 1970's, high inflation made it more productive to invest in the physical asset market than in the money market. Severe inflation caused firms to carry market values well below their actual worth. Therefore, it was cheaper to obtain needed fixed assets by acquiring undervalued firms than to purchase new assets or secure new capacity. Thus, in the 70's, takeover activity was inspired by low stock prices and low q ratios. So, to contrast the reasons behind these two waves, in

the 1960's mergers were pursued due to the presence of viable investment opportunities whereas in the 1970's, takeovers were motivated due to an absence of better investment alternatives.

Three additional market factors were cited as determinants of merger and acquisition activity. First, merger activity is positively correlated with growth in real GNP. This shows that takeovers are induced by the market's subjective beliefs about the availability of profitable investments. A second variable is firm cost of capital. The higher the long-term cost of capital for individual companies, the less likely it is to participate in a takeover. Lower real corporate bond rates being significantly correlated with the number of mergers support this claim. The final component is risk. One of the benefits of a conglomerate merger is the reduction in overall risk enjoyed.

Weston takes the impact of these results and suggests three basic rules to follows. One, make sure there is some element of relatedness, two, put an emphasis on managerial incentives and three, be aware of wishful thinking when projecting cash flows.

With the help of the media, the concept of corporate raiding has become a common issue in the business marketplace. Holderness and Sheehan (1985) go beyond the "raiding" and actually study the individuals responsible for this process. They chose for their sample six men, all described with negative adjectives regarding their motives and tactics. They found the precise definition of corporate raiding hard to pinpoint but it was agreed upon in the media that these men focused on short run

profits at the expense of long run value.

Holderness and Sheehan pose this pertinent question in their assessment of these gentlemen. Does the evidence support the hypothesis that these raiders reduce shareholder wealth? They attempts to find the answer by measuring the stock price changes around the announcement date of holdings by the six. Now, according to efficient capital market theory, expected reductions in value should be reflected in stock price when announced. But, interestingly enough, target shareholders of the six did not find negative impact on announcement day, nor in up to two years subsequent. In fact, statistically significant positive returns were recorded.

These authors take these results and offer two hypotheses to help explain. The first is the claim that the "raiding" leads to improved management. Some change the existing CEO, some actually become involved in the management and other times just their stance on certain issues relevant to the firm will induce change. The second claim is that these firms may increase in value due to their undervalued status at the time of merger and these raiders may have the knack for identifying firms of this type.

It seems feasible that these two claims may be intertwined. It could be that companies are undervalued due to inefficiencies in management, in which case these raiders may really serve as catalysts for change by addressing both problems simultaneously.

Torabzadeh and Bertin (1987) decide to limit their analysis of merger activity to that of leveraged buyouts. While a traditional merger brings two economic entities

together, a leveraged buyout is more of a restructuring. The similarity, of course, is that the bottom line in both is a change in corporate control. What happens is that a group of investors, usually consisting of management, purchase all or a substantial portion of shares outstanding, using debt for financing. This has the effect of changing the corporation from a public to a private concern.

The resulting firm is usually left with a high level of debt and by concentrating large equity investment into a few hands, the gain of risk sharing is forfeited. Post-merger high debt levels are a part of normal merger management. These costs are nonexistent in LBO firms, which also avoid several transaction costs associated with public corporations. Some of these costs include agency costs associated with the asymmetry in information between stockholders and managers, compliance with regulatory agencies, SEC disclosure requirements and costs associated with maximizing outside shareholder wealth.

The change in structure also leads to a benefit in the post-buyout firm. As stated previously, the actual buyout is financed by a large amount of debt, generally from the junk bond market. The larger the debt, the larger the tax savings provided by the tax deductibility of the interest payments. Another factor is that in these buyouts, the funds are borrowed against the assets of the firm. These assets could easily by liquidated to pay off the debt so some of the leverage risk is reduced. Given these theoretical benefits to leveraged buyouts, Torabzadeh and Bertin analyze the returns to target stockholders in such transactions to see if economic gains are enjoyed in practice. The authors note that some prior works have looked at returns

on LBO's but not exclusively. They improve on these works by using a larger sample and examining these returns over a longer period. The latter step is important and is also vital to observe.

Jensen and Ruback (1983) review the scientific evidence that addresses the role of the market for corporate control in our economic society. They define corporate control as the struggle to determine the management of corporate resources. The interesting point of this definition is that it makes the key players managers or management teams as opposed to the stockholders. The stockholder role is more passive, although their role is extremely important.

Jensen and Ruback begin by measuring the abnormal returns enjoyed by firms involved in mergers and tender offers under both successful and unsuccessful mergers. The substantial difference between the significant stock price gains for successfully merged target firms and the insignificant changes for targets of unsuccessful mergers is worth noting. This implies that the benefits of mergers are only realized when the acquiring firm obtains control of the target.

Another implication is that the stockholders of potential target firms could be harmed when managers oppose takeover bids. The only exception occurs when management's anti-takeover actions lead to an increase in bidding, thus a higher final takeover offer price. Target managers constantly claim that merger activity is damaging to stockholders which is not surprising considering their control, reputation and jobs are at stake. The evidence, however, disproves the managers' claim.

Larcker (1985) deals with agency theory's impact on merger and acquisition

activity. Agency theory, of course, deals with the contradiction of the short-term, profit motivated interest of managers versus the long-term outlook shareholders usually possess. Alternatively stated, managers are more concerned with making decisions which will make the firm appear successful in the short-run. These types of actions do not conform to the appropriate long-run objective of shareholder wealth maximization. One of the measures employed to combat this problem is the use of compensation contracts for management. The thrust of this paper is that parallels exists between the motive of the manager and merger involvement and that these motives are influenced by the particular incentive used.

Most compensation contracts can be broken up into one of two categories. One of these being short-term contracts which are really profit-sharing arrangements. Incentives of this type generally make managers less willing to engage in activity that will not increase profits right away. Of course, the flip side is compensation contracts that induce long-term decision making which are referred to as performance plans. Here, a manager would more correctly evaluate a proposal based on the total benefit of investment, not immediate benefit.

Short-term incentives cause managers to be more concerned with immediate value on paper, thus, being labelled accounting based contracts. Conversely, long-term contracts have been referred to as market based. As far as mergers are concerned, two results of this study are directly related to the use of accounting based compensation schemes. Mergers under these managers tend to use cash more for payment and they are more likely to receive negative announcement reaction.

The agency theory problems discussed are more likely to occur in firms where managers do not own much stock or where no large blocks of investors own shares. This reduces the possibility of anyone or one group monitoring the actions, thus the term "manager-controlled". Those contrasting firms where monitoring does take place are called "owner-controlled" firms. Manager controlled firms are more likely to engage in conglomerate mergers or acquisitions which tend to diversify. But, this diversification seems to occur at the expense of the shareholder. So, it seems as though the compensation scheme used does impact merger action.

Dodd (1985) set out to examine the market for mergers and acquisitions. The market for corporate control has grabbed headlines and momentum in today's business world. Of course, opinion on this subject is divided across those who realize the societal economic benefits and those who oppose it (most likely because of the impact on their jobs). Although target managers continuously resist, this market has been viewed by most as a vehicle for channeling resources from inefficient hands to efficient ones.

A similar debate revolves around the higher and higher premiums being offered and whether they are justified. Some argue that these growing premiums show that bidder managements pursue investments at the expense of their own stockholders. The finding of some negative bidder returns is consistent with this. Others feel that these premiums are justified because of the increase in value expected by the joining of these entities.

Controversy even exists on more basic level. Critics feel that the corporate

form of organization has many pitfalls despite its success over time and world economies. These same critics claim that the traditional view of firms being owned by stockholders is oversimplified. This is probably accurate since shareholders are better utilized as suppliers of capital whose economic function is risk-bearing. Corporate decision-making falls into the hands of management and the tendency for managers to pursue self-interest is prevalent. This is where the market for corporate control steps in and provides the initiative for the manager to do the right thing.

Merger activity has also found proponents from empirical data. Most bidder firms have realized zero abnormal growth which is equivalent to experiencing normal return. However the abnormal returns of target firms have enjoyed substantial increases. Another interesting result of this testing shows negative returns for target firms prior to merger and positive prior returns for the bidder. This result implies that target firms were in need of the reallocation of resources the corporate control market induces and that bidder firms have enjoyed the success that enables them to institute takeovers.

Mueller (1977) deals with the effects that conglomerate merger activity has had on the financial marketplace. These empirical results are of particular interest given that the year of publication is 1977. This means that the samples used are drawn from years at least a decade before the recent literature. This not only implies different economic conditions but differing motivations for merger.

Mergers in these earlier periods were usually parallel with bull markets, in contrast to recent takeover activity. But interestingly enough, the evidence presented

is very consistent with the works of current empiricists. On average, the shareholders acquiring firms had not enjoyed any extra profits as a result of merger, although substantial positive returns were realized by target firms. These results led to a critique of conglomerate merger activity referred to as the managerial theory of merger.

This theory suggested that the ownership versus control issue of agency activity allows managers the freedom to go outside of the objective of stockholder wealth maximization. Evidence displayed here concludes that a repercussion of conglomerate activity is the resulting increase in risk, stemming from additional leverage. So this theory questions why a manager would pursue an investment that induces risk and provides no real benefit to its stockholders. To further support the claim of managerial self-interest, they ask why target managers resist mergers when evidence displays an apparent gain for these shareholders.

There were, however, studies during this period that supported mergers from an acquirer's perspective. Conclusions from these tests showed acquiring firms gain from merger. Managerial theorists responded by noting that these results were all based on stock price increases occurring in bull markets, in which case, the gains cannot be directly attributable to the merger.

Mueller, obviously a proponent of the managerial theory, felt that these conglomerate mergers induced growth, but internally derived. This kind of growth comes at the expense of socially productive forms of growth. If mergers meet needs for expansion, then they compete with capital investment, research and development

and external growth. It seems a manager would be indifferent to the source of growth, but society would be better off if assets were created instead of acquired. So, in 1977, Mueller recommended that caution be exercised for future merger activity. Obviously, the corporate world did not listen.

Elgers and Clark (1980) decided to shed some light on some of the ambiguity found in previous merger studies. For example, Mandelker found that the wealth of shareholders of acquiring firms increased up to merger date. Whereas, Ellert found that buyer's wealth position decreases up to at least seven months before the merger. They wisely conclude that this paradox may stem from the use of a thin statistical base. In other words, since mergers are generally motivated by several objectives acting together, a statistical test based on one factor would lead to problems in interpreting results.

Their tests focused on the timing and amount of gains to buyer firms and the effect of takeover on either the systematic or unsystematic risk of the two firms in question. They compared the actual monthly returns of merged firms to the required monthly returns. This difference, or residual, was calculated monthly for the two years preceding and following the merger.

As in other works, they found moderate gains enjoyed by bidder firms and substantial gains to target firms. Unlike previous results in the literature, their research displayed differences in risk effects, both systematic and unsystematic, across merger types. Unfortunately, the authors failed to go into detail about the specifics of this last result.

Dodd and Ruback (1977) look specifically at tender offers to assess their impact on stockholder return. A tender offer is a corporate control mechanism that consists of a bidder approaching shareholders directly. The bidding firm offers purchase of those shares at a premium, in an effort to obtain block ownership. Usually, a successful tender offer is followed by a merger within five years.

Two contrasting hypotheses are tested empirically in this study to test tender offer impact. The first is called the positive impact hypothesis which states that the announcement of a corporate takeover releases positive information about the transaction, and the stock prices reflect this information. This benefit stems from increased market power and monopoly rents, added value through synergy or the need for inefficient management replacement. Alternatively, the zero impact hypothesis states that corporate takeovers have no impact on the values of firms involved, based on the principle that no positive gains accrue from successful tenders and negative returns could be realized if unsuccessful (due to the costs of tender offer).

The empirical findings indicate that acquiring firms earn significant positive returns prior to merger announcement and only successful bidders earn positive returns at merger. Both successful and unsuccessful target firms earn large positive returns from tender offers at merger announcement. The evidence indicates that bidding firms experience good performance before and during the tender offer, and these gains are exclusively a result of the offer. Therefore, our authors reject the zero impact hypothesis. A final point is that the fact that unsuccessful offers still

induce positive return, makes the theory of efficient management replacement stronger than synergy since the two entities never combine.

If an investor decided to purchase the shares of two different companies, his portfolio would have a certain value. According to the theory of synergistic benefits, these same two firms merged, should produce higher value. Haugen and Langetieg (1975) attempt to find out. Their focus is not on the dollar benefits of the combination but on the risk attributes of the distributions of rates of return.

The study examines 59 industrial mergers from 1951 to 1968 where stock was used as the medium of exchange. The two firms merged are placed with two additional firms to form the control group. So, the experiment consists of two groups of paired firms, one group of actual mergers and the other the "controlled mergers". Their objective is to search for significant changes in the underlying distributions which affect the two-stock portfolio of either group.

It has been suggested that mergers may reduce the risks of bankruptcy, price fluctuations and the quantity of raw materials. It has also been suggested that mergers could reduce the pressure of competition and the risk involved with inefficient management. These factors would most likely affect the risk position of the equity in such a way as to induce change in the risk attributes of the distribution of rates of return. The results of the experiment failed to show any such changes. Thus, any stockholder weighing his portfolio equivalently would achieve the same results by investing in each individual firm.

Kummer and Hoffmeister (1978) focus on the cash tender offer market of

mergers. The Williams Act of 1970 required all information about tender offers to be disclosed. This legislation motivated interest in the market forces that led to these transactions and its impact on participating firms. The valuation consequences of these offers are examined by testing three hypotheses.

First, that target firms usually have low abnormal rates of returns prior to takeover. This is usually a result of inefficient management and this fact also provides the incentive for tender offer. The second hypothesis claims that target firms whose management resist takeovers have lower performance prior to takeover than those who do not. Third, the premium of the bid for resisted tenders will be larger than the opposite.

To investigate the validity of these claims, the authors use a sample and several subsamples. The aggregate sample shows that firms who are susceptible to takeover do in fact experience low abnormal returns. A subsample consisting of target firms whose management offered no resistance displayed results similar to the overall sample but of less magnitude. However, the results of returns of those tender offers that were resisted by management and subsequently failed, showed even lower abnormal returns than the overall sample. Finally, the premiums paid for resisted tenders were significantly greater than the tenders accepted. The reason stem from the fact that bidding firms anticipate paying more for targets that oppose the offer. Thus, it is clear to see that the empirical findings are consistent with the hypotheses.

Recent research has concluded that cash tender offers promote the efficient utilization of corporate resources. They have led to increased wealth for shareholders

of bidding and target firms. Hoffmeister and Dyl (1982) go beyond previous studies by presenting actual models which the authors claim will predict the outcome of cash tender offers. These models are intended to assist firms planning to initiate offers to select firms where the probability of success is high.

Their models are separated into four subgroups so as to encompass all possibilities for tender offer. The first model is a general model for classifying the success of a cash tender offer and the second extends the first by adding a variable representing information about the threat of target resistance. The third model determines the success of a hostile cash tender offer and the final model tests a hostile offer with information about the expected target resistance.

The models were designed to give a guide to the relevant factors to consider. Some of these factors include management reaction, firm size and its financial statements. The tests of these models have predicted both success and failure with considerable accuracy. Thus, these authors feel, the use of these models should reduce the money spent on unsuccessful takeover attempts which should make the market for corporate control more efficient.

Myers (1984) presents his views on the most practical manner to evaluate a potential target firm. The focus in a decision of this sort is to ask the right questions and get the right answers. In order to ask the right questions, you must define the benefits and the costs literally.

Doing so specifies the addition to economic value. A mistake is to treat the value of the merger as a discounted cash flow analysis. It is better to focus on the

incremental cash flow. In other words, to use as a benchmark the value of the target firm and add to that the additional value derived (synergy). This approach is designed to force firms to look at the synergies first, then the incremental benefits weighed against the incremental costs.

Another suggestion for acquiring firms is to not treat projected cash flows as one pure flow, but a mixture of different flows. The incremental value comes from different causes and each flow should be analyzed based on its specific cause. Each component should also be valued with the relevant technique based on the type, thus "valuation by components".

Some examples of different components of merger value include nominal cash flows like depreciation tax shields, operating cash flows and the potential for growth. These components should be evaluated in such a way as to almost demand some proof of positive net benefit generation. He does, however, note a realization that given the high premium averages existing in the market, this proof may be hard to obtain. But the point is that going through this analysis will give a firm a much clearer picture of what they are getting into.

The set-up of A Discussion of Mergers and Acquisitions (1985) is rather different from the norm but the informational content is evident. The setting is a group discussion featuring several experts in the mergers and acquisition arena. Their actual discussion makes up this article and the highlights will be summarized here.

Bill Schwert, Professor of Finance at the University of Rochester addressed

the consistent empirical finding that the gains experienced by merger usually accrue to the acquired firm. He remarks that the size of the bidding firm is usually quite larger than the target. Therefore, it may not be meaningful to compare the percentage change in value of the two.

Steve Friedman, head of the Mergers and Acquisitions Department of Goldman Sachs, feels that the explanation for the dramatic increase in premiums stems from two factors. For one thing, inflation has corporate assets in general appreciating in value. Another point is that the depressed stock market has created a spread between underlying values of shares and the liquidation of assets. A response was that this inflation should be reflected in the stock price. Friedman noted that this inflation may not necessarily affect the price as much as the actual assets this price represents.

A related point was raised that revolved around the results of a study conducted by Paul Malatesta. He actually calculated the dollar losses and gains to the target shareholder. When the comparisons were made based that measurement, the estimation of the gains to bidding firms was comparable to those of target firms. Thus, given those results, it is not clear that acquired firms realize all the benefits.

The last major point discussed dealt with merger as a means for diversification. Several of the participants agreed that it is unlikely that a firm can add value by diversifying into an unrelated industry. Dan Fischel, Professor of Law at the University of Chicago Law School, claims in general, diversification is available to individual stockholders at almost no cost. Therefore, it is difficult to justify paying

a huge premium to do so. The party that really benefits from the transaction is the manager. It's almost as if they are diversifying their own human capital at the expense of shareholders.

The beauty of this article is that it featured nothing but opinions about the pertinent issues in the market for corporate control. It is one of the few articles that allows views to be exchanged, shared and challenged so that a much better perception of the issues can be grasped. It served as a summary of all the one-viewed theoretical and empirical works within the merger and acquisition literature.

The final set of articles in the merger and acquisition section of this literature review focuses on an issue crucial to the development of this dissertation. Upon merger, firms can use one of two methods of accounting to record the transaction. The two accounting conventions, purchase and pooling-of-interests are both non-taxable exchanges and the actual cash flows associated with one or the other are identical. The difference arises because the purchase method creates goodwill whereas pooling does not. Critics of the pooling method claim that this will lead to higher stated earnings and thus, abnormal positive returns.

Hong, Kaplan and Madelker (1978) note that an efficient financial market should be able to see through an accounting change and only respond to economic variables. To test this belief, they analyze a sample of mergers using the pooling-of-interests method during a ten-year period. They conclude that a lack of evidence exists to support the hypothesis that abnormal returns are realized by these firms around the time of merger and for a year subsequent.

It is, of course, true that these firms did report higher earnings so it is most likely accurate that the efficient market does not reflect an overstatement. Critics of this test have objected by noting that these firms amortize goodwill in time periods that are too small to be detected in their empirical tests. The authors respond, however, by noting that if this effect is that insignificant, then the issue may not be as important as originally claimed.

Gagnon (1967) attempts to address the issue of whether a firm will select the purchase method or the pooling-of-interests method. Gagnon presents a model that seeks to predict the choice based on whether or not firms prefer to smooth income or not. Since pooling does not have an adverse affect on earnings, one argument would be that the preference would be for pooling since earnings would be higher. However, an alternative view is that firms prefer instead to smooth income over time. This empirical work concludes that those prediction models that are based on the income smoothing hypothesis are much less efficient. The best predictions of the acquisition accounting choice occur with those models that instead make the assumption that firms seek to maximize earnings.

Sapienza (1967) critiques Gagnon's work by focusing on his time period and how that affects the interpretation of his work. He notes that Gagnon's data set begins in 1955, whereas pooling was not clearly defined in accounting standards literature until 1957. He goes on to state that most industries and all academicians had yet to become fully aware of exactly what pooling was in 1955. Sapienza concludes that this deficiency in Gagnon's paper is critical because at that time,

managers had not yet realized that opportunities associated with selecting one method over another. Therefore, how could a test of this decision be accurate?

Copeland and Wojdah (1969) look deeper into the issues examined by Gagnon's work. They begin by determining whether or not Gagnon's 1955 to 1958 data compare to data current to the writing of their article. After discussing the minor differences between the two data sets, they conclude that there had been a significant increase in the number of mergers accounted as pooling. They then tested whether or not the theory of income maximization as an objective for accounting choice held over long periods of time. Their test provided strong evidence in favor of consistent income maximization.

Anderson and Louderback III (1975) attempt to find out if firms' use of accounting conventions have changed dramatically since the issuance of Opinion 16 and 17, which limits the use of pooling. They answer the question by determining if the stricter requirements have adversely affected the income maximization objectives of firms in general, given the fact that purchase and pooling are no longer alternatives. They conclude that if purchase was desirable, then firms would simply purposely violate one of the twelve pooling rules so that they could use purchase. They also find that there has been no decline in income maximizing behavior in the time periods after the accounting rules.

Schipper and Thompson (1983) examine several regulations which either directly or indirectly impact mergers and acquisitions. Their objective was to determine how these regulations affect shareholder wealth. The portion of their

paper which will receive attention here is their analysis of the Accounting Principles Board Opinions 16 and 17, which limits the use of pooling-of-interests pending satisfaction of twelve stringent requirements. Opponents of this rule claimed that cash flows would be adversely affected if firms could not successfully qualify for pooling. Schipper and Thompson find out, however, that it is not actually cash flows which are affected, but only accounting numbers. Therefore, there is no direct effect on shareholders if pooling cannot be used. There could, however, be indirect effects for firms whose lending arrangements depend on accounting figures.

Robinson and Shane (1990) provide an answer to the question of whether not there is any value associated with selecting one acquisition accounting method over another. This value is represented by the difference in premiums paid in purchase deals versus pooling deals. These researchers test this issue using three different regression techniques. They do conclude that there is a price paid for the benefit derived from using a particular accounting method. This price is reflected in the fact that on average, higher premiums are paid for firms that utilize the pooling-of-interest method. They claim that this implies that bidders are willing to pay for the benefits of pooling.

The previous section covered several factors pertinent to the issue of merger and acquisition theory in general. Again, a dissertation focusing on bank mergers must begin by providing the reader with a knowledge of those theories and results that affect all acquisitions. The wide array of subjects covered spanned from what motivates mergers to an analysis of corporate raiders to how merger activity is

impacted by agency problems. However, the set of issues addressed the most concerned stock price reaction to mergers, acquisitions and tenders offers. A great deal of consistency existed among the papers that dealt with this topic. They all essentially agreed that zero to negative abnormal price reaction was enjoyed by acquiring firms and that positive abnormal price reaction was commonplace for target firms. The next section specifies our analysis by looking at issues relevant to bank mergers.

Bank Mergers

This empirical work focuses on merger and acquisition activity within the financial institution industry. This subset of the merger area merits study because of the differences in the nature of banks as compared to nonbank corporations. The major difference lies in the regulatory makeup of the banking industry. However, certain deregulatory measures implemented in the early 1980's eased some of these restrictions. As a result, merger activity increased considerably. In late 1988, regulators imposed legislation on banks in the form of risk-based capital standards. Some critics of this proposal claim that these standards could adversely affect merger activity, through its treatment of goodwill. I feel this is a question worth answering empirically.

Historically, banks have been under considerable regulatory control when it comes to mergers. This fact had generally created some difficulty for interested banks to facilitate mergers. But, like most regulatory relationships, banks found ways

around these restrictions. They created loopholes by forming bank holding companies and by utilizing the differing regulatory bodies to their advantage. Specifically, national banks are ruled by the Office of the Comptroller of the Currency, whereas, state-chartered member banks are under the auspices of the Federal Reserve Board. Authority is given to the FDIC for state-chartered banks who are not members of the Federal Reserve System. According to Beatty, Santomero and Smirlock(1987), since strict uniformity does not exist among the three groups, bank holding companies utilized the fact that they had considerable latitude in deciding which agency would rule on their merger application.

Under Ronald Reagan's leadership, however, federal and state legislation was passed to address the claim from banks that they were stifled from competing with non-bank financial institutions. These deregulatory measures successfully increased competition in the financial services industry, but they also led to an increase in merger activity. Specifically, in 1981, two Texas holding companies appealed that the Federal Reserve Board should not have denied their applications to acquire commercial banks. In a landmark decision, the Fifth District Court of Appeals ruled in favor of the Texas banks. This decision disallowed the Federal Reserve from imposing anti-competitive requirements on banks, that are more stringent than those specified by anti-trust laws. Before 1981, the Federal Reserve had denied several applications that did not violate anti-trust statutes. (Burke 1984) Thus, these court decisions altered the regulatory standards governing bank acquisitions and led to a bank merger wave.

Concerning acquisition activity, more mergers took place in banking during the eighties than in any other industry. Comparing this activity to previous periods, the average number of banking combinations per year was 150 in the 1950's. This figure dropped to 145 in the 1960's and 143 in the 1970's. However, in the 1980's, there was an average of 400 bank mergers per year. (Sinkey 1989)

To begin this look into the bank merger phenomena, let us peruse the literature concerning the characteristics of the major players. This portion of the literature review sets out to determine whether or not there are major differences between acquirers, targets and those banks which do not participate in acquisition activity.

The first major distinction is that there is a substantial size difference between acquirers and the acquired. Darnell (1973) claims that acquiring banks, on average, are much larger in size than targets as measured by both assets and deposits. For example, Phillis and Pavel (1986) found in their bank sample that bidders averaged $4 billion in assets and targets averaged $1 billion. They also found that most small targets were acquired by medium sized banks and that most medium to large banks were acquired by extremely large, money-center banks.

There are several theories which can be posited to explain these size differences. First, information asymmetry states that larger targets are much more likely to have the resources to hire the managerial talent good enough to spot good targets. Looked at another way, only larger banks will be able to raise the funds necessary to meet the high prices and premiums associated with the target bank

market. Second, scale and scope economies allow larger banks the opportunity to enjoy significant production cost advantages. Hunter and Timme (1987) show that the acquisition of banks represents a long-term pursuit of lower per-unit operating costs. Third, regulatory constraints may motivate banks to acquire targets that are small enough so as not to lead to an increase in market concentration (thus violating antitrust laws).

Rose (1989) set out to make comparisons between acquiring firms and similar size non-acquirers. He found that acquiring banks were no more profitable than non-acquirers as measured by return on assets and return on equity capital. He also found no difference between the make-up of asset portfolios, capital adequacy, market share, growth rates and risk exposure. He did, however, find differences in the fact that merging banks displayed lower operating efficiency and were more aggressively managed than their non-merging peers. He also found that merging banks relied more on deposits from local sources whereas non-mergers secured a higher percentage of funds from the money market. This phenomenon can be explained by the belief that acquirers do so to protect or increase their deposit base.

Rose also looked at the performance of acquired banks versus comparable non-acquired banks. He found that target banks were less profitable, less risky and more dependent on local deposits. Smith (1971) provided an empirical work which found that there was not a substantial difference between the profitability of banks which were acquired versus those who were not. This profitability was measured by earnings. However, Smith did find that the performance measures of acquired banks

was higher than those of non-merging banks. Performance was measured by accounting ratios. Hobson, Master and Severiens (1978) found identical results. Shome, Smith, and Heggestad (1986) suggested that bank managers may place less emphasis on maximizing shareholder wealth since the regulatory umbrella of merger approval protects potential target banks. Their argument stems from the fact that bank acquirers are much more concerned with increasing growth as opposed to increasing stockholder value. Their claim is that this focus on growth can often times lead to too high of a price being paid since the focus is on size, not value.

The question now becomes, what drives banks to actively seek out mergers and what motivates target firms to agree to be acquired? The answer to this question was explored by Rose (1988). Rose conducted a survey of 600 banks participating in acquisitions over a fifteen year period. The most revealing component of his work is that the majority of bank mergers are motivated by several factors simultaneously.

The five factors that received the most attention (listed in order of importance) were increases in bank profitability, access to new markets, gains in market share, increases in the combined entity's growth rate and increases in market power. Rose also gathered data concerning whether or not bank managers felt that these goals were met. Maintaining the same order, managers felt that these objectives were met 60%, 70%, 56%, 58% and 47% of the time, respectively. Other factors included potential rise in the stock price, expansion of the range of services offered to customers and greater stability in earnings.

General merger and acquisition theory puts forth the theory that mergers may

play a role in replacing inefficient management. Their rationale is that a poorly managed firm provides an acquirer with the potential for gains associated with replacing management and improving performance. This "inefficient-management hypothesis" was tested by Hannan and Rhoades (1987). They examined a sample of banks over a 12 year period. They stated that "these results yield no support for the hypothesis that poorly managed firms, measured in a number of different ways, are more likely to be acquired than other firms." Thus, they found no evidence that inefficiently managed banks have a higher probability of being target firms.

This review will now focus on studies examining stock price response to acquirer shareholders. Wall and Gup (1989) claim that stockholders of acquired banks may be able to benefit from mergers because they can sell their stock at a level higher than the pre-merger price. Their study set out to determine the effect on acquiring stockholders and they found that on average, that they did not benefit. They used their results as evidence to support their opinion that acquirers may not be correctly analyzing the potential value of acquisition decisions. A similar work by Born, Eisenbeis, and Harris (1983) focused only on bank mergers involving interstate acquisitions. These three researchers studied the stock market reaction of bank announcements using event study analysis. They found negative significant abnormal returns to the stockholders of the acquiring banks. They claimed that this can be interpreted as a signal by the market that the majority of these bank acquires may be overbidding for potential target banks.

Lobue (1984) looked at bank holding company mergers and found differing

results depending on the sizes of the parties involved. Acquiring shareholders enjoyed positive cumulative residuals only when the acquirer had a small level of assets relative to the target. However, the smaller the seller to buyer asset ratio, the more negative the returns to acquiring stockholders. This result tends to concur with the previous claims that acquiring firm shareholders usually experience negative abnormal returns upon acquisition announcement since it is more common for an acquiring bank to be larger than its target. Moynihan (1989) claimed that eighty percent of the banks who made acquisitions had stock price reactions that ranged from mildly negative to extremely negative. He provides the following to explain this market phenomenon. It will in most cases be detrimental to the management of any potential target bank to allow an acquisition to take place. The obvious reason for this stems from the loss of control and possibly employment associated with the merger. A potential acquisition also breeds uncertainty to target customers and shareholders. As a result of these circumstances, high prices must be paid to compensate for the fears and doubts of target players. Due to the fine line between "acceptable" and "excessive" prices paid, sometimes premiums are paid at the expense of shareholder wealth.

Dubofsky and Fraser (1985) also found negative stock price reaction to the shareholders of acquiring banks. They claimed that a major reason why merger activity spiraled upward in the 1980's is that relaxed regulatory standards increased the number of potential bidders interested in finding merger candidates. Their hypothesis was that this competition would jack up the amount of premium necessary

to beat out other bidders. This view is supported by James and Wier (1987) who found that gains to acquirers were negatively related to the number of bidders. Dubofsky and Fraser concluded that this scenario would lead to drastic overpaying for target firms and would have a negative impact on the acquirer's stock price. They focused on the 1981 court cases addressed previously. Their claim was that these cases changed the market for corporate control and they found stock price reaction to justify this.

Hawawini and Swary (1990) provided evidence from the capital markets concerning mergers and acquisitions within the banking industry. They analyzed the reaction of participating banks to not only the announcement of acquisition but also to the announcement by the Federal Reserve of acceptance or denial. This reaction is captured by focusing on the abnormal returns of the stock prices of both the bidder and the target.

As far as target banks are concerned, share prices increased, on average, about 11.5 percent during the week of acquisition announcement. However, the stock price of acquiring banks decreased by about 1.5 percent. When the Federal Reserve approves merger applications, bidders experienced a decline of 1.7 percent. Upon denial, there was not significant change in their prices. The authors claim that this fact can be explained by the theory that the market has already predicted a denial and this fact is already reflected in prices. When merger applications are approved, target banks enjoyed stock price gains of around 1.69 percent. When denial takes place, these targets' share prices decreased by 7.29 percent.

Beatty, Santomero, and Smirlock (1987) provide an empirical analysis to evaluate the issues relevant in the relationship between the two sides of a bank merger transaction. Their work focuses on bank merger premiums and some of the features common to acquiring banks. They create a model to represent the premium paid for a target bank where the dependent variable is the purchase price divided by the book value of equity of the target firm. Their sample included 264 bank mergers. They regressed their bank merger premium dependent variable on explanatory variables representing accounting ratios, regulatory and market features of the bank merger market.

Looking only at the accounting data section of their bank merger sample, several interesting results are reported. According to their sample, there is evidence that there is a substantial difference between the nature of the acquiring banks versus the target banks. On average, the books of the acquiring banks displayed a small percentage of not only safe securities like U.S. Treasuries but also investments in general. These same banks also possessed a high percentage of loans compared to acquired banks. The writers use this information to make the claim that not only are bank bidders more loan intensive but they tend to invest in riskier securities.

The results of the bank merger premium model also yielded interesting results concerning acquiring and acquired banks. Their model provides evidence that the more well-managed a target bank, the higher the premium that will be offered. Their model also predicts that target banks will be more likely to receive a high premium when they operate in a noncompetitive environment. The rationale is that the less

competition a bank has, the more valuable it is and the more acquirers will be willing to pay for it. The final result stemming from this model is that most acquiring banks go into merger transactions with the intent to change the portfolio breakdown of the target bank. Beatty, Santomero and Smirlock claim that these results provide the type of information that can be beneficial to potential acquirers and targets.

The review now turns to the role that the medium of exchange plays in the bank acquisition market. Due to the facts that bank mergers differ from acquisitions in general and that this work revolves around bank mergers, I first review literature focusing on the significance that payment method has had on acquisition activity. Studies that have dealt with this issue include Haung and Walking (1987), Harris, Franks and Mayer (1987) and Wansley, Lane and Yang. (1983). These empirical works looked at the abnormal returns of both target and bidding firms. For target firms, they all found higher returns for cash compared to security payments. The question now becomes whether or not the same holds true for banks. According to Hawawini and Swary (1990), for target banks, the abnormal returns associated with cash exceed stock acquisitions by 5.76% at the time of announcement. Acquiring firm abnormal returns for cash offers exceeded stock offers by 1.97%. Their evidence was not as convincing for the time periods subsequent to announcement. Therefore, there is some evidence that cash offer returns are higher but that it shows up more at the time of initial announcement.

The final portion of this literature review examines how signalling theories affect merger analysis.

Information Economics and Its Impact on Mergers

When dealing with corporate involvement in mergers and acquisitions, the nature of this activity allows it to be viewed as an active market in which the control of public corporations are traded. Information economics revolves around the important role that knowledge, messages and data play in the interaction between economic entities. Models incorporating these information effects are used to find equilibria in financial markets, including the market for corporate control. The particulars of the takeover market present a scenario that can best be analyzed in an asymmetric information context. This section of the paper focuses on how merger activity is represented by asymmetric information models, so as to assess the impact of signalling and agency theory on the market for corporate control.

Dreyfus (1986) describes his work as being an outgrowth of the classical literature on mergers and acquisitions. He achieves this by surveying several theoretical developments considered recent at that time. He begins by pointing out two major differences between the takeover literature, then and now. While the focus used to be on the underlying motives behind merging, now emphasis is placed on the process in which acquisitions are enacted and how the gains involved are distributed between both sides of the transaction. The second difference deals with the sources of those gains. Stress was placed on synergy and economies of scale whereas the effects of managerial inefficiencies are now deemed important.

Dreyfus presents first, a noncompetitive model of takeover bids (motivated by Grossman and Hart, 1980), in an attempt to deal with the "free rider" problem. This

problem occurs when individual shareholders, involved in a takeover bid, anticipate an increase in share price, and therefore refuse to tender their shares, so as to enjoy the value added as a result of the bid. The model focuses on the actions of a corporate raider who has access to information about the value of the bid to him and the management or stockholders who possess private information about the value of the target.

The bid is successful if the number of shares presently held by our raider plus the amount the tendered is equal to or greater than the number of shares he needs for control. What is also important here is the subjective probability that target shareholders have about the bid's success, since this drives their actions. If the target believes the raid will succeed, the value of the firm in the event of no takeover must be greater than the price offered. Similarly, in equilibrium, if the securities that non-tendering minority holders receive is less than the offer price of the raider, success will occur. If not, then holders might as well not tender and enjoy the higher non-tender amount.

This is where the free-rider dilemma comes into play. One of the assumptions in this model is that the value of the bid to the non-tenderer is equal to the value the raider expects to get. If that is the case, then a bid cannot go through unless the price offered is greater than or equal to the value to the bidder. But, no profit would be realized by our raider and he would not participate. Thus, to avoid this problem, there has to be a positive difference between the value of the post-bid target and the value captured by non-tendering holders.

The solution to this enigma is to make use of corporate charters to allow an expropriation of remaining non-tenderers to the tune of a "dilution" factor made up of the difference between the value to the raider and the value to minority holders. An important point to note is that stockholders voting on such charter changes would be motivated to lessen "free-riderism" so as to be attractive to bidders. But, the downside is that these incentives on the macroeconomic level, may not conform to the social welfare maximization idea.

Some additional significant results to note are as follows: Even if a raider privately knows his expected value, that will not necessarily assure him abnormal profits as long as the value to the non-tendered equals the raider value, since the information will be fully revealed at the time of merger. Second, if public information about the value of the target is only imperfectly correlated with the value to the bidder, then this value serves as a signal to the marketplace. An increase in the efficiency of the signal could lead to a reduction in any abnormal gains to the raider. The lesson to be learned here is that if more stringent disclosure laws were implemented, excess profits enjoyed in practice could be controlled.

Dreyfus looks at the subsequent work of Vishny and Shleifer (1985) who deal with the scenario where the raider does in fact hold private information about his expected value. They conclude that despite free-riding, a corporate raider can realize high profits by making large purchases of stock prior to the bid. Fortunately, this is difficult to do in practice due to the disclosure requirement that when any one entity more than ten days later.

The analysis is now expanded to include more than one bidder competing for the right to merge. Introducing competition does not eliminate the free-rider problem because it is independent of the degree of competition. But, this model is impacted substantially by the addition of competing raiders. It was displayed earlier in our discussion that dilution played a major role in the solving of free-riderism. In the previous model, the higher the amount of dilution, the lower the premium allowed in the event of a bid. Now, if competition leads to prices being offered that are larger than the minimum bid, then the relationship between dilution and premia diminishes.

The element of bidder competition is a rough analogue of traditional open auctions. Subsequent to an initial bid, offers can be bid up until a high bid is uncontested. The major difference is that these takeover "auctions" occur over a longer period of time. This extra time allows potential raiders to gather information which can make their participation in the game more effective.

After the first bid, competing raiders will attempt to outbid each other, each one only going up to their individual estimate of the target's worth. If the cost of entry into the game is larger than the expected gains, then, of course, a rational bidder would choose not to compete. The first bid is important because it influences the competitor's estimates of target value as well as the amount of their competing bid. There could be a situation where indirect bidding takes place. The first raider attempts to make an offering in such a way as to deter the second. No actual bidding takes place and the results are similar to a patent situation for the winner.

The next issue revolves around the role the threat of possible takeover may play in keeping management on their toes. Stated another way, merger and acquisition bidding seems to impact the agency relationship to some degree. In this context, takeovers can be viewed as a last ditch effort to motivate or replace inefficient management.

In Grossman and Hart's model of managerial behavior, they assume the raider's expected value is known by all at bid time, that he holds no shares in the target and that the value of the target is also common knowledge even before the bid. The assumption driving this equilibrium is that the bid price offered must be greater than the value of the target firm. This possibility would lessen the expected utility of the manager which induces him to increase his level of effort to avoid a successful bid. One additional point, if the offer price is greater than or equal to the value to the raider minus any dilution effects, then the takeover threat would be independent of the manager's effort level and monitoring would cease to exist.

Grossman and Hart claim that other researchers dealt with management resistance that lead to a bidder being replaced by an incumbent manager or a preferred raider. A resistance strategy that eliminates the bidder at a strict cost to the stockholders is greenmail. This is simply a premium paid to a potential raider in exchange for his holdings of target shares. Not surprisingly, this tactic has met much criticism, but some researchers feel that greenmail could in fact work to the benefit of target stockholders.

Consider a game where potential raiders are of two types, high or low. These

raiders are aware that they can increase the target's value but, they must incur research costs that they are willing to pay because of the synergistic benefits they will enjoy. To achieve the optimal offer, the target realizes that at least two high-type bidders must compete to raise the price to its maximum, representing the current value plus expected synergy gains. Obviously, the nature of this game is such that a low-type bidder would offer nothing to the gain desired by the target. Therefore, the target would be willing to pay greenmail to buy the low raider out and encourage competition among the remaining high types.

Here is where the information economics come into play. In this equilibrium, weak targets pay greenmail and strong do not because strong firms' need for assistance in research costs would be minimal. By paying greenmail, the target is sending a signal. The high-type raiders interpret this information as revealing that the target is weak, thus inducing the incentive for expending research costs. This signal differentiates the strong and weak target firms producing a separating equilibrium. It is important to mention that there could, in this game, also exist an equilibrium where greenmail is never paid, in which case it would be a pooling equilibrium.

Our author notes that up until now, models have focused on the impact of simple bids. An area that should be addressed is the way to create bids that would achieve optimal results. Previous models have also concentrated on the interaction of raiders, target shareholders and management but the complex world of takeovers involves several participants in practice. When these issues are addressed, the merger

phenomenon will be in a clearer position to be studied more carefully.

Travlos (1986) decided to expand on the results of studies concentrating on returns experienced by acquiring firms. Previous works concluded that studies on mergers showed on average negative returns. Similar studies on tender offers showed insignificant positive returns. Travlos goes beyond these conclusions and claims that it is not the merger type but the medium of exchange that leads to these results.

It is not a mere coincidence that mergers are for the most part financed by common stock and tender offers done so by cash. The differences in these payment methods is what Travlos feels drives the differential return relationship not between merger versus tender offer but between cash offers versus stock offers. He presents three factors to help prove his claim.

If information asymmetry exists on the bidder side then the payment method provides a signal to the market. If the bidder holds private information about its true value then this value will not be revealed in the stock price prior to the acquisition. The firm will choose cash if they feel their firm is undervalued and security payment if they feel they are overvalued. Therefore, cash will signal a positive value and stock the opposite. So, any subsequent stock price change will incorporate the gains from the takeover plus the effects of the information. Thus, this argument implies higher returns for cash offers.

A second possible implication is the tax treatment of both methods. From the target firm's perspective, a cash offer could induce an immediate tax obligation whereas a capital gain on a security payment could be deferred until the sale of the

share. Because of this difference, a higher premium is expected for a cash offer. From the acquiring firm's point of view, a cash offer allows them to increase the depreciation on acquired assets so as to receive additional tax shields. It could be hypothesized that these shields increase the benefits to cash paying bidders but it would depend on the magnitude of the higher expected price.

The third component of the transaction is its effect on risk. One of the synergistic benefits of merger is a decrease in overall risk. This decrease will result in an increase in debt capacity that benefits the bondholders, but at the stockholder's expense. Thus, an offer made in stock will cause this transfer in wealth which, in turn, would lead to a fall in stock price. A cash acquisition, however, could offset this negative change leaving the price unchanged. Empirical evidence however does not show support for this claim.

Therefore, it seems wise to conclude that the effects of differential return on bidder firms based on medium of exchange is caused by the signalling effect of these methods. An interesting symbol of the nature of the current business world is that these higher return tender offers are usually associated with hostile takeovers whereas the lower earning mergers are friendly takeovers.

Hansen (1987) develops a model that assumes that the negotiations leading up to a merger are done so under asymmetric information. He goes on to theorize how the implications of this model drive the decision to prefer a particular medium of exchange over another. He is motivated by the fact that prior to his work, no research dealt specifically with the negotiation/transaction process or what role the

payment method plays. Specifically, his paper analyzes the transacting process using a model of bargaining under asymmetric information.

The game is as follows: There are two players, both firms. The first, the acquirer or bidder, has plans to buy the second denoted as the target or acquired firm. It can be viewed as a two-agent bargaining game under imperfect information. Simultaneously, both sides of the transaction are attempting to pinpoint their optimal strategy and this interaction makes for interesting analysis. The transaction equilibrium for these two firms will be sought under two types of asymmetric information.

In the first scenario, the value of the bidder is public knowledge but the value of the target is private information held by the target. In this context, the target will only be willing to accept an offer price that is greater than its privately known value. Since only lower than offer value firms will accept this merger, a lemons market results. If the acquiring firm offers cash, it can only avoid this adverse selection by deciding on the value ex post to make the transaction beneficial. This will not always be the case so trading will not always occur.

To deal with this "thinning of markets", a viable alternative would be to offer security payment instead of cash. You see, stocks will always be a preferred medium of exchange in this context because of its contingent payment mechanism. To explain, when cash is offered, the value added is determined on the spot. The value of holding a security is realized ex post. For example, if a target knows that its value is high, they can anticipate an increase in stock value as a result of the merger.

Now, what if information asymmetry existed on both sides of the transaction? The value of the target is private information as before. But, the actual value of the bidder is known only to them. All that the target knows is the distribution of values for the acquiring firm. What you have here is a "double lemons" problem.

The sequence is as follows. The bidder will offer stock if they feel the target's evaluation of them is overvalued. On the other hand, if the reverse is true, the acquirer will offer cash. The target firm perceives the value as a function of the price offered and uses that as a signal to infer the bidder's true value. This signalling equilibrium occurs when the value function used by the target is confirmed by the acquirer's choices.

Usually in signalling equilibrium, a necessary condition is that the marginal cost of signaling decreases with the actual value of the signaler. Here, the previously discussed contingent-pricing effect of stock can sustain equilibrium. This addresses the question of why a bidder would not be induced to give a false signal dictating a value higher than actual. It is true that a marginal gain will occur from lying but with it also comes an increase in the marginal cost. Therefore, there is no incentive to cheat.

Certain implications of this model should also be addressed. The probability of an acquirer using stock as a medium of exchange decreases as the bidder increases in size relative to the target. The reason being that the contingent pricing effect of stock, although positive, would be insignificant if the target was not large enough to add any substantial value. Finally, the method of payment chosen also provides a

signal to the market so this will affect the market value of the newly created firm beyond those enjoyed by the merger itself.

Brown and Ryngaert (1989) go beyond the work of Hansen by presenting a model which claims that if given a choice of a cash offer versus a combination containing some stock, the method of payment chosen in an acquisition is a function of private information about the equity value of the bidder. The acquiring firm is classified as being either of high type or low type, the type designating the value of its equity. The bidder possesses private information about its value or type, giving rise to an asymmetric information scenario.

If any capital gains are realized by the merger transaction, the target shareholder in question would have to pay tax on that amount, in that year, if payment received was cash. Conversely, a stockholder receiving payment through securities could defer this tax liability until the security was sold. Therefore, bidders paying cash are expected to pay higher premiums which encompass this tax difference.

A high type firm would be willing to pay the higher premium regardless of the tax consequences. They would be more concerned with the avoidance of possibly issuing undervalued stock in the payment process. On the other hand, a low type company would much rather offer a "non-tax" payment to avoid the high price associated with cash payments. A non-tax offer is one that consists of total payment in stock or a combination containing at least fifty percent stock.

This model is similar to earlier works in this area including that by Hansen

(1987). However, Brown and Ryngaert make two predictions beyond previous analysis. They first contend that since stock is utilized as a payment mechanism to avoid tax consequences, it should not be used in taxable mergers. Second they predict that non-taxable offers, whether strictly stock or mixed, should be interpreted by the target as revealing negative information about the firm's true type.

This model looks at each possible method and analyzes it from an information and tax perspective. This is important, because if, for example, the model considered information only, the revaluation of the bidder would be fully revealing based on the amount of cash in the offer. The sequence of the model follows this chain of events. The management of the acquired firm presents a menu of offers, the bidder accepts (or makes a cash tender offer) and the target shareholders vote based on the signal they have just received from this screening model. When both parties are content with their strategies, the appropriate percent of stockholders approve and the conjectures about the bidder's type are realized as equilibrium exists.

Recall, the two predictions made by our authors. These predictions were tested empirically by analyzing the types of offers made and the announcement effects of bidders. The analysis of the types of offers yielded two results consistent with the model. First, the majority of non-tax offers were all stock or mixed. Second, most mixed offers were at or around the necessary fifty percent mark, suggesting the importance of tax consideration in acquisition choice. The outcome of the tests on bidder offers indicated that returns were around zero for cash offers and negative for stock or mixed offers, also consistent with the model.

Evidence has displayed that the struggle for corporate control has produced some benefits but its impact has also infringed costs on some managers and threatened certain interest groups. More specifically, some argue that takeovers are harmful to society from a productive as well as an emotional perspective. Proponents, however, feel that their effect leads to an increased efficiency in overall asset use. This issue is even under current Congressional debate. This controversy is examined more closely by Jensen (1986). It appears that his thesis leans heavily on the advocation side of the market for corporate control which he supports with analysis and evidence.

He first looks at the gains enjoyed by acquired firms. There is no arguing about the large total benefits historically enjoyed by target companies. For example, from the period between January 1981 and May 1985, acquired firms of 260 tender offers reflected an increase of 40 billion dollars. The evidence on gains to the firms doing the acquiring is not as clear.

On average, those companies participating in friendly takeovers earned about zero but hostile takeover bidders enjoyed average earnings of about four percent. Because hostile tender offers are generally transacted in cash (to avoid delays in security transfers), these results are better linked to the form of payment as opposed to the type of offer. These results help to show that since target firms usually hold the bargaining chip of negotiation, they generally enjoy the bulk of benefits from the merger. A contributing factor is the impact of governmental regulation on tender offers. In fact, shortly after such regulation, overall premiums received by targets

increased to a large degree.

The market that corporate control struggle has created is essentially made up of different individuals or entities, internal or external to the firm, competing for the right to manage the corporation in question. This leaves current management in an uncertain predicament with regard to job security but this market plays a vital role in the agency theory conflict. If things within the firm are not going as well as desired, takeovers allow outside forces to step in and make improvements. In a sense, it allows for external control.

Viewed another way, the corporate control market serves as a catalyst for change. When changes in market conditions and technology are prevalent, managers sometimes have trouble adapting. Even if a given project no longer adds to firm value due to these constraints, a manager who has put in considerable time and energy may be reluctant to give in. Often times, new management who have no emotional ties to projects, employees or the firm itself are more likely to administer needed change.

Many critics of merger phenomena claim that the economy is harmed by the use of divestitures. Divestitures are basically takeover defenses that consist of the sale of a portion of the company's operating assets. Of course, this tactic is more effective if that asset is the one of interest to the bidder. Jensen refutes the critic's claim by pointing out that these replaced assets or plants are not eliminated but reallocated. These reallocations can turn out to be more beneficial than the original structure. The crucial point is that without the threat of takeover, current

management may not have realized that the asset in question was undervalued and that restructuring would benefit.

There are several factors that contribute to the advent of merger activity. One underanalyzed cause is referred to as the free cash flow theory. When a particular firm's operations leaves them with excess cash, an agency problem arises. If the manager in question decides to pay out these additional funds in dividends then he feels as though he forfeits some control. The more cash paid out, the less resources available for managerial decisions at which point a manager would be at the mercy of the capital market. The agency costs present themselves because these same firms usually have no or few profitable alternatives available. Thus, in an effort to retain control, a manager would choose to invest in marginal return projects rather than pay out large dividends.

Debt is one instrument that can aid in the reduction of the agency cost. Issuing additional debt forces organizations that have high free cash flow and few high return proposals to distribute excess cash to shareholders, which in turn helps alleviate wasted low-return investment. This effect is labeled as the control hypothesis of debt. These control effects do impact a firm's capital structure because as leverage increases so do other agency costs.

Some aspects of free cash flow theory have been demonstrated empirically in various industries. Examples are the oil, tobacco, food and broadcasting industries which all, for one reason or another, meet the criteria of having low-return investments and considerable available cash flow. Acquisitions serve as a viable

alternative for managers to utilize cash in lieu of paying stockholders. The theory predicts that when internal inefficiencies of these companies lead to wasted resource allocation, high value takeovers will result. It also predicts that these acquirers will enjoy favorable performance prior to announcement as a result of the free cash flow. A final note is that the targets tend to be low value firms with unsuccessful management or high value firms who refuse to pay their high cash flow to shareholders.

The next issue addressed by Jensen is the controversy surrounding high-yield or junk bonds. He attacks opponents of this financial vehicle by noting the excess media hype it has received. Although contrary to public perception, these bonds have only been used in a small number of mergers. He feels that they serve as an important takeover tool because they allow smaller firms to achieve the necessary financing to be bidding competitors.

He goes on to provide an additional example not directly related to merger activity. With the deregulation of thrifts, it would be instrumental for these institutions to expand to offering commercial loans. To avoid the high costs of creating and staffing a loan department, these high-yield bonds could be used by thrifts for their own commercial lending. It is quite interesting that the source for this particular section is private correspondence from none other than financially troubled Drexel Burnham Lambert. This serves as an example of the uncertainty involved in analyzing any facet of the complex world of finance.

Historically, Delaware has been a state that hands down precedental decisions

regarding corporate law. Their proficiency has been lacking, however, in cases from the takeover arena. This lack of proficiency probably stems from the manner in which they view the motivations of the corporation. They use the business judgement rule as a base, which assumes that a given board of directors behaves in a strictly altruistic way. They would be better off adopting a new set of corporate incentives that accounts for human nature self-interest the way that agency theory does.

Throughout this corporate control analysis, Jensen has brought to light the benefits that merger activity has had on shareholders, the corporation and economic society. The only group to not benefit is top-level management. Their loss is the freedom to make decisions without being under the scrutiny of the true owners of the firm. It is obvious that the shareholders mentioned should have the final say in this matter. Unfortunately, management's status in society allows them to use their political influence to put strong pressure on government. As a result, several bills restricting the market for corporate control are being considered which, in the long run, will damage our economic system as a whole for the sake of a few.

The thrust of most of these articles focuses on how the efficiency of signals provides information on the valuation of ownership shares during the negotiation process. They focused on the relationship between the players on both sides of the transaction, and how they interact to reach equilibrium. The interesting point is that all of these researchers, while approaching the situation with differing methods, yield similar results. They all seem to advocate merger, implying that takeovers serve an economic function.

It appears that the existence of mergers also plays a role in the agency theory dilemma. Since ownership of the average corporation is widely dispersed, it becomes extremely difficult for the principals to monitor the behavior of management. This moral hazard with hidden action can be mitigated, just by the threat of merger. If a manager is motivated by concerns of self-interest like his job, prestige and control, then he would be motivated to maximize shareholder wealth to avoid negative consequences (from his perspective). On the other hand, mergers and acquisitions could be a manifestation of the agency problem rather than a solution, from the acquiring firm's perspective. Although the net benefit of merger is positive, there has been little real gain enjoyed by the stockholders of bidding firms. Thus, the incentive to pursue a merger may be driven by the individual motivations of acquiring management. There are questions of merger activity that remain unanswered but it seems as though the application of information economics plays a vital role, by bringing forth several factors into the analysis that might otherwise be ignored.

To summarize, this literature review has touched on those ideas and results that set the stage for a merger and acquisition analysis. The initial set of articles was covered in an effort to provide the reader with exposure to the views of academia concerning the pricing, profitability and even the perception of merger activity. Special attention in the literature was placed on how the economic benefits of acquisition are divided between the stockholders of acquiring and target firms as reflected in abnormal price reaction.

This review then set out to address those academic results which are specific

to merger and acquisition activity within the banking industry. Due to the regulatory make-up of the financial institution industry, several of these research works focused on the implication of completing deals subject to those constraints. An exploration of the size and performance characteristics of the acquirers and targets ensued, followed by a look into the impact that payment method has had on bank mergers. Attention was also placed on the factors that motivate bank mergers. This portion of the literature review also touched on some of the regulatory history concerning mergers as well as some brief facts and figures from bank acquisition activity.

Since information economics is such an important topic in financial theory, this literature review concluded by analyzing how signally theories affect merger activity. Since there is usually asymmetry in information between managers, stockholders, potential acquirers and the overall market, this issue becomes important to document. Articles addressed such issues as the relationship between holders, perception and reaction of shareholders and management resistance to takeovers.

CHAPTER 5
METHODOLOGY

Testable Implications

The objective of this empirical work is to attempt to determine whether or not the goodwill component of the risk-based capital standards has impacted the bank merger market. The first issue to be addressed is just how we define this "impact". In order to determine if these standards have changed the market for bank control, the specific factors that are being affected must be isolated. The goodwill rule raised the capital cost of purchase accounting for acquiring banks. Any bank may select the accounting method of their choice. However, it may be difficult for a bank to qualify for the twelve stringent requirements needed to use pooling. So, as a result of the risk-based capital rules, the costs associated with purchase must be weighed against the costs of conforming to the extensive pooling criteria. Since goodwill is only germane when purchase accounting is used for merger transactions, the decision to use purchase or pooling will serve as a proxy for a difference in the manner in which acquisitions are structured. This difference, in turn, will be used to represent a measurable change in the market for bank control. The selection of the accounting method can be interpreted as an "impact" because if the decision preference differs as a result of the regulation, then this can be viewed as a bank acquisition being influenced not by economics but by regulatory and accounting factors. So, with the

accounting choice serving as the dependent variable, the decision to use purchase or pooling will be examined for bank acquisitions both before and after the regulation.

Since an attempt will be made to answer questions about the bank merger market before and after the regulation, another important issue concerns just when "after" goes into effect. The selection of the relevant date is crucial to this work since there must be enough post-capital standard data to permit a meaningful comparison to the earlier period. Initially, a problem arose because full phase-in of these standards did not begin until December of 1992. However, subsequent documents revealed that the goodwill component of the regulation actually went into effect in the December 1990 initial phase-in. A perusal of a special Federal Reserve Risk-based Capital Standard press release brought even better news. The final announcement of these standards occurred in March of 1988. Since banks would then begin to prepare for the implications of this rule, this should be used as the relevant date. The specifics of the press release confirmed this by stating that "any goodwill acquired after March 12, 1988 would be deducted immediately". Even if banks had previously anticipated the regulation change, they would not face a goodwill deduction with any merger completed prior to this date.

It must be noted that there are those who posit that the method of accounting is not as important a decision as one might think and therefore should not be focused on for the purpose of analysis. The rationale is that for acquiring firms, the payment method is selected first, with the accounting treatment chosen in response to whether stock or cash is used. Thus, the question becomes, does the method of financing

drive the accounting choice or vice versa?

In an effort to provide a meaningful response to this valid question, let us first view the interaction between the medium of exchange and the accounting method. The pooling-of-interests method requires 90% of the payment to be made with securities, so all pooling transactions are essentially stock. In other words, an acquisition set up as pooling can never be paid for with cash. Purchase accounting, however, can be set up as either cash or stock. Viewed from the other dimension, 100% of cash mergers are set up as purchase and 80 to 90% of stock transactions are set-up as pooling. In other words, an acquiring firm can use stock for purchase accounting but it is seldom done. To provide an example graphically:

Recall that this study analyzes the potential impact that the risk-based capital standards may have on the bank merger market. As mentioned previously, the focus in measuring this impact is on the treatment of goodwill within these standards. Goodwill is a relevant issue when purchase accounting is used. No goodwill is generated when pooling is used. An acquiring bank will either incur goodwill or it will not. However, if the accounting choice is only a result of what mode of exchange the particular bank selects, then additional analysis which incorporates this issue becomes necessary.

Empirical Design

In order to provide an empirical answer to the question at hand, an ordinary least squares regression could be used, but several problems could arise. Since the decision to select purchase versus pooling is qualitative in nature, the normality assumption of the error term is violated. In addition, any estimated values of the dependent variable could fall outside of the 0 and 1 range. These problems can be overcome through the use of the logit model.

Statistically, a linear function of the explanatory variables is set equal to the logarithm of the ratio of the 0 and 1 alternatives. To produce the relevant coefficient estimates, the qualitative dependent variable is regressed on the independent variables. Another way to view this methodology is that the dependent variable in the regression equation is the logarithm of the odds that the particular choice will be made.

The logit model can be viewed as

$$\frac{P}{} = \text{the odds in favor of a positive response}$$

where a value of 1 represents a positive response.

These odds increase from 0 to infinity as the probability of a positive response increases from 0 to 1. The natural log of these odds is referred to as the logit of a positive response.

So,

$$L = \log \frac{P}{1-P} = f(x)$$

where L is simply a variable representing the logit equation

where x equals a vector of unbounded control variables

This logit is unbounded which means that the right-hand side variables can take on any numerical value without violating the 0,1 bound for the probability (P).

To fully provide an answer to this empirical question, a logit is run where the dependent variable represents the decision by the acquiring firm to use the purchase method of accounting or the pooling-of-interests method. Firms using purchase are denoted by the number 1 and those using pooling take on a value of 0. To capture the impact of other factors which could contribute to this decision, independent variables representing capital level, total assets, book equity, core deposits, interest expenses, interest revenue,relative size of assets, relative size of equity, and net income are used. The selected independent variables are vital to the proper running of this logit analysis. In order to truly find the impact of the risk-based capital regulation on bank merger decisions, any other variable which could in any way affect the decision must be included. Including these control variables allows me to isolate the true variable of interest, which is the decision by a particular bank to select the purchase or the pooling-of-interests method of accounting.

Since the empirical question rests on the impact of risk-based capital standards, it is vital to include the effect of any potential difference in the decision before and after the regulation. To quantity this timing difference, an indicator variable (dummy variable) will be used, where any completed acquisitions announced before March 12, 1988 will be treated as 1 and any post-regulation acquisitions will take on the value of 0.

The model is of the form:

$$L = \beta_0 + \beta_1 DBEF + \beta_2 CAP + \beta_3 TA + \beta_4 EQBK + \beta_5 CORE + \beta_6 INTEXP + \beta_7 INTREV + \beta_8 NI + \beta_9 RELA + \beta_{10} RELE$$

Where,

DBEF	=	value 1, before regulation/value 0, after regulation	
CAP	=	capital ratio (of acquirer)	(+)
TA	=	total assets (of both parties)	(+)
EQBK	=	book value of equity (of both parties)	(+)
CORE	=	core deposits (of both parties)	(-)
INTEXP	=	interest expense	(+)
INTREV	=	interest revenue	(+)
NI	=	net income	(+/-)
RELA	=	relative size, assets	(-)
RELE	=	relative size, equity	(-)

In an effort to test the robustness of the above logit, a second logit will be run that incorporates the dollar amount control variables as a ratio of total assets. Without looking at the analysis from this perspective, I run the risk of my right-hand-side variables suffering from scale problems. To provide an example, suppose two banks have the decision to select an accounting convention where Bank A has net income of $1000 and Bank B $3000. At first glance, Bank B's higher net income level would affect its decision in a manner to be discussed later. However, if Bank

A has total assets of $50 and Bank B of $1,000,000, then from a comparative standpoint, the impact of net income on the decision could change their coefficients on net income dramatically.

The second logit model is of the form:

$$L = \beta_0 + \beta_1 DBEF + \beta_2 CAP + \beta_3 TA + \beta_4 WEQBK + \beta_5 WCORE + \beta_6 WINTEXP + \beta_7 WINTREV + \beta 8NI + \beta_9 RELA + \beta_{10} RELE$$

Where,

DBEF	=	value 1, before regulation/value 0, after regulation	
CAP	=	capital ratio (of acquirer)	(+)
TA	=	total assets (of both parties)	(+)
WEQBK	=	book value of equity/total assets (of both parties)	(+)
WCORE	=	core deposits/total assets (of both parties)	(-)
WINTEXP	=	interest expense/total assets	(+)
WINTREV	=	interest revenue/total assets	(+)
WNI	=	net income/total assets	(+/-)
RELA	=	relative size, assets	(-)
RELE	=	relative size, equity	(-)

To address the payment method issue, I provide two additional tests which serve to support or challenge the robustness of that empiricism which has been laid out thus far. First, earlier in the exposition, a graphical representation of the

accounting/payment decision led to a conclusion that if a bank chooses to pay with stock, then it will then have a choice of either selecting purchase accounting or the pooling-of-interests method. This second set of choices serves as an scenario identical to that of the bank acquisitions tested in the first two logits. Those logits analyzed the decision to either use purchase or pooling. A bank using stock has that same decision to make. If in fact, the choice between purchase and pooling is relevant enough to provide strong empirical evidence for this issue, then a logit run on those banks that paid for targets with securities should yield coefficients of the same sign and significance.

In words, since a bank in my sample that uses stock as its medium of exchange essentially has the same requirements as my entire sample, then the impact of the risk-based capital standards should be the same. Statistically, I will now run an identical logit but only on those banks which paid with enough stock to qualify them for pooling. So, with the dependent variable choice still being purchase versus pooling, these stock-financed bank acquisitions are run using the same control variables and the same indicator variable representing before and after the regulation.

The second way to discriminate between the payment method and the accounting choices is to realize that these two factors together yield a total of three decision-making combinations. An acquiring bank will either use purchase and pay with cash, use purchase and pay with stock, or use pooling and pay stock. This three option decision can be set up statistically as a trivariate logit. This multinomial logit

performs the same analysis, however allowing for three possibilities as opposed to the two in the standard logit model set forth in Chapter 5. Thus, this trivariate logit model allows the possibility of going deeper into this decision making process for merging banks. This logit will be identical to that of the standard logit as far as the sample and the right-hand-side variables are concerned. The sole distinction lies in the fact that the dependent variable choices now take on the values 0, 1,2 as opposed to the 0, 1 logit analyzed earlier.

The trivariate logit will work in the following manner. The decision by a bank to use pooling and pay with stock will serve as a benchmark. Recall that any transaction set up as pooling must utilize stock. This benchmark decision will then be compared with both the option to use purchase and pay with cash and to use purchase but pay with securities. This trivariate logit will yield two columns of relevant coefficients as opposed to the one column associated with the bivariate logit previously run.

Logit Model Analysis

In an effort to justify the use of the empirical technique that I have utilized in this work, it is important to develop a review of related literature. This portion of my literature review serves the purpose of defending the appropriate form of my regression set-up, the logit model. My hope is that this section will address two issues. First, why the model that I have selected is statistically the correct one for this dissertation and second, to provide prior examples to help show that this type of

model can and should be used to interpret economic data.

Demaris (1991) discusses the various methods that researchers were forced to utilize 20 years ago to provide answers to qualitative questions. The logit model, which is a special form of the general loglinear model, finally provided an appropriate framework to handle such problems. According to Demaris, the logit model "offers a mechanism for a more efficient estimation of models which seek to answer questions of a categorical nature." Stated in simpler terms, it is the best measure to use to provide a statistical method to answer "yes" or "no" questions. He goes on to say that, "Logit modeling achieves the purpose of serving as a viable statistical procedure when the measurement assumptions for multiple regression fail to be met."

Cramer (1991) states that, "the logit model is the natural complement of the regression model where the dependent variable is not a continuous variable but a category within a given classification." He claims that when a variable of this nature occurs among independent variables, a dummy variable taking on a value of 0 or 1 is appropriate. However, when dealing with a 0,1 dependent variable, the regression model breaks down. He goes on to justify the use of logits by comparing some of the similarities that it has with the more accepted linear regression model. Both models focus on causality as opposed to strict statistical relationships and both were created to deal with "experimental data"; that information whose direction of causality is unclear.

Beck (1980) writes that the logit model provides an interpretable linear model for categorical response and therefore provides a number of advantages over previous

techniques. These advantages include but are not limited to the following. The assumptions of the logit model are not as limiting and stringent as either the regression model or discriminant analysis. There also exists an availability of several statistical tests that are not possible with other measures. It is also easier to interpret final results because there is usually more of an impact on the relevant dependent variable.

Amemiya (1981) takes on the task of analyzing and evaluating qualitative response models; those models whose endogenous variables take on only discrete values. He does a good job of describing logit analysis from a statistical viewpoint as well as from the perspective of the economic theory involved. His work provides important insight into this work because of two claims that he makes. He feels that the logit model is the most important development in econometrics in the ten years prior to his writing and he goes on to mention that there are numerous applications of the logit model in economic journals.

Theil (1975) discusses what he feels is the best mechanism to both specify and estimate a statistical relationship where the dependent variable is qualitative. He claims that when dealing with a categorical model, the probability implied by ordinary least squares can not be necessarily restricted to the values of 0 and 1. Empirical success in such a situation can however, be achieved through the use of a logit equation.

The articles reviewed up to this point dealt with the merit of using the logit model to respond to a statistical problem that is qualitative in nature. There is no

question that the response analyzed in this dissertation is of a categorical nature since the dependent variable will be one accounting choice or the other. The only other question to respond to is whether or not a qualitative model can be used to address economic issues; which are traditionally viewed as quantitative in nature. I utilize this portion of the logit literature review to provide a few examples of researchers who also felt that the logit model could effectively answer economic questions.

Demenecich and McFadden (1975) studied 115 individuals traveling to work in an effort to measure the impact of their decision to drive or take the bus based on time, cost of each measure, occupation, salary and race. Wu (1965) analyzes the decision to purchase a durable good or not to, by isolating depreciation and the stock of the firm selling the good. Lee (1978) studies the propensity to join a union and his right-hand side variables include wage rate, industry attributes and the characteristics of the actual workers. Li (1977) analyzes the probability of owning a home based on census data, age, income, family size and race. Theil looks whether or not a firm changes its production plan where its independent variables represent the firm learning about it orders and inventories at a later date.

Finally, we look at Perloff and Wachter (1979). The selection of this work is important because one component of its statistical set-up is quite similar to mine. These authors studied the impact of a wage subsidy program. They evaluated the effectiveness of the program by regressing the percentage increase in employment on several independent variables. The relevant part occurs because one of these was a dummy variables which represents whether a not the firm knew about the program.

This indicator variable is analogous to the one I utilize in an effort to represent periods before and after the Risk Based Capital Standard regulation.

This look at relevant articles is by no means meant to be exhaustive. It serves as a mechanism to provide deeper insight into how and why my selected statistical measure should be used to answer the empirical question at hand.

Explanatory Variable Justification

Because the issue of interest in this dissertation is quite current in nature, I cannot directly draw upon past empirical works. However, since I am analyzing bank mergers,I can rely on similar works in an effort to justify the use of my explanatory variables. It is important to reiterate that the purpose of my right-hand side variables is to control for any other factor that could affect the accounting form of an acquisition decision by a bank. Therefore, in viewing past articles, my objective is not to find a perfect fit, but to find similarities across statistical set-ups. The next paragraph includes those papers that include variables identical or similar to mine.

Curry and Rose (1984) use a tobit model (which is similar to the logit model used in this dissertation) to analyze the valuation of new banks acquired. Curry and Rose include among their control variables net income, assets and deposits. Hannan and Rhoades (1987) use a multinomial logit to determine if banks either have a horizontal acquisition, extension acquisition or do not become acquired. That empirical analysis was similar to this one. They include net income, assets and capital on the right-hand side of their equation. They also use a dummy variable

representing time as is done in this work. Rhoades (1987) analyzes premiums on bank acquisitions and uses net income, capital and several dummy variables for his empirics. Rose (1977) uses a tobit model and includes deposits, net income and capital.

CHAPTER 6
DATA

Sample Selection

In order to make a comparison before and after the regulation, we must begin with a set of bank mergers. The initial sample consisted of all completed bank acquisitions occurring during each of the years 1985-1991. American Banker's Annual Top Numbers Edition and The Federal Reserve Board's monthly report "Changes in Status of Banks and Branches" served as the sources for these completed deals. The entire sample consists of 150 deals. The actual date of announcement for completed mergers for all 1988 transactions was examined in an effort to completely separate those deals into both the "Before" and "After" groups. Initially, the "Before" sample consisted of all deals from 1985, 1986, 1987 and the first part of 1988 (up to March 12th), and the "After" group contained all mergers taking place from March 13, 1988 to the end of 1991. (See Table 4, next page). Note the substantial difference between the percentage breakdown of purchase vs. pooling in this sample as compared to the surveyed data presented earlier.

Data on the method of accounting choice (and the medium of exchange) was collected by finding the merger terms on the acquiring firms' 8K filings from the Corporate and Industry Research Reports. The 8K filings, found on microfiche, document those significant corporate events that led to some change in the firm.

Obviously, acquisition or merger is one such change. Some of the above bank acquisition data for the "Before" group came from a data set graciously provided by Houston and Ryngaert from their earlier bank merger work. (Resolving Information Asymmetries in Corporate Acquisitions: The Use of Conditional Stock Offers in Bank Merger Agreements).

Table 4
Description of Data

Year	Number of Deals	Purchase	Pooling-of-Interests	Percentage Purchase	Percentage Pooling
1985	30	16	14	53%	47%
1986	35	13	22	37%	63%
1987	27	11	16	40%	60%
1/1/88 - 3/12/88	1	1	0	100%	0%
3/13/88 - 12/31/88	3	1	2	33%	67%
1989	19	7	12	37%	63%
1990	18	8	10	44%	56%
1991	21	6	15	29%	71%

In an effort to control for other variables which may impact the decision by a bank to use purchase or pooling, several right-hand side financial variables are included in the analysis. These items, which will be discussed later, were collected from Bank Compustat and Moody's Bank and Finance Manual for both the acquiring firm and the acquired firm for both the "before" and "after" sets of data.

Although the included right-hand side variables are used for control purposes,

it is still useful to analyze the expected signs associated with their coefficients. Each variable will be discussed as it was viewed prior to the running of the test and then compared with the actual results.

Capital amounts could affect the selection of the preferred accounting method in either of two ways. First, the higher the capital, the more creditworthy the firm and the more chance that it would be in a strong enough financial position to afford the costs associated with purchase. After the regulation, the issue is a little different. Since capital level and accounting choice may be related, having more capital after the regulation could mean that there is more of a chance that purchase would be used because the capital requirement becomes less of a issue. Thus, either way, the capital ratio should increase the chance of purchase accounting.

With total assets, larger total assets could mean that a bank would be larger and thus more likely to be in a strong enough financial position to obtain the funds necessary for a purchase transaction. Thus, the sign should be positive. The sign prediction justification for equity book value is almost identical.

The core deposit variable represents the ratio of core deposits to assets. Core deposits can be defined as those funds which will remain in the bank regardless of the economic environment. Since core deposits usually consist of funds deposited in local markets, smaller community banks are more likely to have higher ratios. Alternatively stated, the ratio decreases as the size of the bank increases. Larger banks are much more likely to be able to obtain the funds necessary to structure a purchase acquisition since less of their money is tied up in core deposits. So, it would

make sense that the sign on its coefficient be negative.

When looking at interest expense, I would think that the higher this variable, the more likely that cash would be tied up in interest payments and the less likely that purchase would be used since purchase transaction are often structured as cash and since higher acquisition prices are usually paid. Interest revenue should have the opposite effect since it could bring in more funds to be used in any potential acquisitions. Therefore, I would expect negative and positive signs on interest expense and interest revenue respectively. However, a bank can borrow readily since it has easy access to capital markets, so this cash flow may not have any effect.

The next variable in question is net income. Similar to some of the arguments stated earlier, it would appear that a bank with higher earnings might be more likely to be able to obtain capital and would subsequently be more prone to use purchase. Thus, a positive sign could occur. But, higher net income could also imply more and higher valued shares to trade with. The higher the value of a given share of an acquiring bank, the fewer shares it would have to offer to meet a particular purchase price of the target firm. This fact may motivate the use of pooling. So, once again, no explicit sign can be predicted.

As far as the relative size of the assets between the acquirer and the target is concerned, the bigger this ratio, the smaller the difference between their sizes. Therefore, the larger this ratio, the more likely that an acquirer would not use purchase. A larger acquirer implies that there is more of a chance that the bank would be able to handle any capital constraint concerns. This also implies that paying

the price for a small target may not impact an acquirer's capital ratio that much. Thus, the coefficient on this variable should be negative. The same story should apply to the coefficient on the relative size of equity between the two acquisition participants.

It is important to be sure that the question of interest can be answered effectively within the confines of the selected regression method. To provide an answer to the question asked by this empirical work, a yes or no type of response is necessary. Each acquiring bank in my sample will either select purchase accounting or the pooling-of-interests method. It has already been stated that the qualitativeness of the response analyzed makes the logit model the appropriate statistical measure.

As previously mentioned, I have made the effort to include all relevant variables on the right-hand side of the statistical equation to control for any other factors that may impact the accounting choice selection. Therefore, I can focus on the decision by the bank to choose one accounting convention over the other before and after the regulation. To account for the differences in this decision during both periods of time, before and after the capital standards, the indicator variable will yield the necessary results. As mentioned earlier, the power of the initial logit test will be examined by exploring the statistical impact of the method of payment choice. To summarize, the above statements reflect the fact that the issue explored by this dissertation has been fit into the appropriate statistical form.

CHAPTER 7
RESULTS

Purchase vs. Pooling

After running the logits, the less important coefficients on the control variables yielded the following results. Contrary to prior estimation, the capital amount had a relatively significant negative value. Both total assets and book equity yielded positive coefficients. The expected negative sign occurred on the core deposit variable. Negative and positive signs were predicted for interest expense and interest revenue, however, both were positive but relatively insignificant for the purchase/pooling dependent variable. The net income variable was negative.

We now examine the results which are the crux of the paper. Keeping in mind that the above variables' purpose was to allow for other effects in the decision, the true answer to our question rests on the indicator variable which represents the difference between the periods before and after the capital standards. With purchase/pooling serving as the dependent variable, the logit yielded a positive before/after dummy variable coefficient which was close to one. This coefficient also has a test statistic of 1.954 which is statistically significant. (See Table 5)

TABLE 5
LOGIT MODEL RESULTS

Dependent Variable is PRCHPOOL (1=Purchase, 0=Pooling-of-Interests)
Number of observations: 150

VARIABLE	COEFFICIENT	STD. ERROR	T-STAT.	2-TAIL SIG.
C	-0.5131551	0.4891216	-1.0491360	0.2959
DBEF	0.7921105	0.4053448	1.9541648	0.5938
CAP	-0.0026308	0.0016192	-1.6247779	0.1065
TA	6.853E-05	8.858E-05	0.7736010	0.4405
EQBK	0.0004054	0.0014584	0.2779695	0.7815
CORE	-7.417E-05	3.282E-05	-2.2595624	0.0254
INTEXP	0.00061505	0.0009707	0.6335336	0.5274
INTREV	0.0002632	0.0002567	1.0252023	0.3071
NI	-0.0010098	0.0018889	-0.5345958	0.5938
RELA	-0.6169413	0.7116668	-0.8668963	0.3875
RELE	0.1620506	0.1726808	0.9384398	0.3497

Log likelihood -91.307398

DBEF = value 1, before regulation/value 0, after regulation
CAP = capital ratio (of acquirer)
TA = total assets (of both parties)
EQBK = book value of equity (of both parties)
CORE = core deposits (of both parties)
INTEXP = interest expense
INTREV = interest revenue
NI = net income
RELA = relative size, assets
RELE = relative size, equity

To fully place the result of this logit analysis into perspective, a little more must be stated about the variables utilized for the right-hand-side of this statistical equation. There existed several representations of two key variables in the data sources that were used. Specifically, there were three different representations of capital and two definitions of net income. The selected capital variable is defined by Bank Compustat as "classified as capital by bank regulators". The appropriate net income variable is "net income available for common equity". This particular logit was used because the selected financial variables best exemplified the definitions of the control variables that I felt participating banks would consider when making the acquisition decision. Stated another way, the logit just examined included those data definitions that I deemed the most appropriate. With two and three definitions for net income and capital respectively, that would yield a total of six logits if every possible combination was used. The five remaining logits were run but since the results were relatively unchanged, there is no need to present them here.

Recall, that in an effort to perform sensitivity analysis on the previously presented logit, potential scale problems are dealt with by running the same logit but with dollar amount control variables weighted by total assets. (See Table 6) Note that the signs associated with the coefficients on the control variables do not change. Also note that the corresponding t-statistics only change slightly.

However, the focus should be on what this weighted variable logit does to the all important dummy variable which represents the time periods prior to and subsequent to the regulation. The coefficient on DBEF in this case is also positive

and close to one. In fact, this coefficient value differs only by .07 when compared to the first logit. The corresponding test statistic is 1.77 compared to 1.95 in the initial logit. Thus, according to this robustness test, the results appear to hold up.

To add to the robustness of this analysis, several changes are now instituted. It is quite possible that the collinearity associated with the variables representing interest expense and interest revenue could bring no substantial statistical meaning or even distort the previous results. It would also appear that having the relative size of assets and equity may be redundant and bring nothing to the analysis. Finally, the right-hand-side variables do not in any way reflect the potential for large premiums to be paid and thus, the possibility of high amounts of goodwill being incurred.

To address these issues, the variables INTEXP, INTREV and RELE will be omitted and a new variable, MKBK will be added. MKBK represents a ratio of the market value of equity of the target divided by the book value of equity of the target. Obviously, the higher this ratio, the higher the difference between the market value and book value of the shares acquired and thus the more chance that goodwill would be a factor. The first two logits will now be run with the new variable set to determine if any substantial difference occurs.

As far as the first logit is concerned, the coefficient on DBEF is still positive but some of the statistical significance is lost. (See Table 7) An almost identical comparison can be made between the second logit (weighted) and the new variable analysis. (See Table 8) With regard to the new control variable, MKBK, the results from both logits yield coefficients which are not significantly different from zero.

TABLE 6
LOGIT MODEL RESULTS

Dependent Variable is PRCHPOOL (1=Purchase, 0=Pooling-of-interests)
Number of observations: 150

VARIABLE	COEFFICIENT	STD. ERROR	T-STAT.	2-TAIL SIG.
C	-2.0331721	2.1734991	-0.9354373	0.3512
DBEF	0.7292408	0.4104359	1.7767470	0.0778
CAP	-0.0015233	0.0011628	-1.3100241	0.1924
TA	8.155E-05	5.780E-05	1.4108500	0.1605
WEQBK	1.1924308	21.477623	0.0555197	0.9558
WCORE	-0.2032830	0.4885236	-0.4161171	0.6780
WINTEXP	26.479902	26.746843	0.9900197	0.3239
WINTREV	1.8341600	4.9606967	0.3697384	0.7121
WNI	-14.724237	42.044477	-0.3502062	0.7267
RELA	-0.5529038	0.6853931	-0.8066960	0.4212
RELE	0.1230640	0.1925642	0.6390806	0.5238

Log likelihood -94.430375

DBEF = value 1, before regulation/value 0, after regulation
CAP = capital ratio (of acquirer)
TA = total assets (of both parties)
WEQBK = book value of equity/total assets (of both parties)
WCORE = core deposits/total assets (of both parties)
WINTEXP = interest expense/total assets
WINTREV = interest revenue/total assets
WNI = net income/total assets
RELA = relative size, assets
RELE = relative size, equity

TABLE 7
LOGIT MODEL RESULTS

Dependent Variable is PRCHPOOL (1=Purchase, 0=Pooling-of-interests)
Number of observations: 150

VARIABLE	COEFFICIENT	STD. ERROR	T-STAT.	2-TAIL SIG.
C	-0.4617919	0.6159499	-0.7497231	0.4547
DBEF	0.6027131	0.3847747	1.5664054	0.1196
CAP	-0.0026394	0.0015423	-1.7113397	0.0893
TA	0.0001150	7.044E-05	1.6321891	0.1049
EQBK	0.0005318	0.0012291	0.4326541	0.6659
CORE	-5.966E-05	3.048E-05	-1.9572591	0.0523
NI	-0.0002894	0.0016860	-0.1716518	0.8640
RELA	-0.4238744	0.6800167	-0.6233294	0.5341
MKBK	-0.0126734	0.1496913	-0.0846637	0.9327

Log likelihood -91.890256

DBEF = value 1, before regulation/value 0, after regulation
CAP = capital ratio (of acquirer)
TA = total assets (of both parties)
EQBK = book value of equity/total assets (of both parties)
CORE = core deposits/total assets (of both parties)
NI = net income/total assets
RELA = relative size, assets
MKBK = ratio of market value of equity to book value of equity of the target

TABLE 8
LOGIT MODEL RESULTS

Dependent Variable is PRCHPOOL (1=Purchase, 0=Pooling-of-interests)
Number of observations: 150

VARIABLE	COEFFICIENT	STD. ERROR	T-STAT.	2-TAIL SIG.
C	-0.3274562	1.5245636	-0.2147869	0.8303
DBEF	0.5678915	0.3886766	1.4610903	0.1463
CAP	-0.0014232	0.00111702	-1.2161868	0.2260
TA	8.054E-05	5.822E-05	1.3834820	0.1688
EQBK	-0.7398596	21.351167	-0.0346520	0.9724
CORE	-0.2258474	0.4830685	-0.4675267	0.6409
NI	-19.824425	40.853194	-0.4852601	0.6283
RELA	-0.4613226	0.6702582	-0.6882759	0.4924
MKBK	-0.0101102	0.1457796	-0.0693528	0.9448

Log likelihood -91.890256

DBEF = value 1, before regulation/value 0, after regulation
CAP = capital ratio (of acquirer)
TA = total assets (of both parties)
EQBK = book value of equity/total assets (of both parties)
CORE = core deposits/total assets (of both parties)
NI = net income/total assets
RELA = relative size, assets
MKBK = ratio of market value of equity to book value of equity of the target

To further test the issues explored by this dissertation, the analysis will now be approached from a different perspective. The focus will now shift to a dummy variable representing the capital level of the acquirer. By doing this, whether or not the capital ratio is high or low is viewed as a mechanism to measure of the goodwill component if this regulation has had an impact. As far as the logit is concerned, those acquirers whose capital ratios are six percent or above take on a value of 1 and all others have value 0. Six percent was selected because the total asset amounts in my sample are not risk-weighted. Therefore, the best proxy for low and high capital ratios correspond to the old minimum capital ratio amount. This new high/low capital ratio dummy variable will be represented by the variable DCAP.

Again, focusing on the dummy variable DCAP, the logit produced a negative coefficient which was very much statistically significantly different from zero. (See Table 9) Specifically, the coefficient was -1.17 with an extremely high test statistic of -2.875. The result on DBEF was basically similar to previous logits. The values of the control variables in this logit did not yield any substantial differences worth reporting.

TABLE 9
LOGIT MODEL RESULTS

Dependent Variable is PRCHPOOL (1=Purchase, 0=Pooling-of-interests)
Number of observations: 150

VARIABLE	COEFFICIENT	STD. ERROR	T-STAT.	2-TAIL SIG.
C	0.06165533	0.6602582	0.0933775	0.9257
DBEF	0.6787216	0.3903864	1.7385895	0.0844
DCAP	-1.1741148	0.4082818	-2.8757461	0.0047
TA	4.900E-05	5.828E-05	0.8407448	0.4020
EQBK	-0.0003777	2.708E-05	-1.2054729	0.6854
CORE	-3.264E-05	2.708E-05	-1.2054729	0.2301
NI	-0.0016742	0.0015587	-1.0741113	0.2847
RELA	-0.3679693	0.7000102	-0.5256628	0.6000
MKBK	-0.0148746	0.1523899	-0.0976088	0.9224

Log likelihood -89.157945

DBEF = value 1, before regulation/value 0, after regulation
DCAP = value 1, high capital ratio/value 0, low capital ratio (of acquirer)
TA = total assets (of both parties)
EQBK = book value of equity/total assets (of both parties)
CORE = core deposits/total assets (of both parties)
NI = net income/total assets
RELA = relative size, assets
MKBK = ratio of market value of equity to book value of equity of the target

Testing the Impact of the Medium of Exchange

This logit analysis provides the first mechanism toward incorporating the method of payment into this statistical analysis. As discussed in Chapter 5, those transactions which were financed with enough stock to qualify for pooling also have the binary choice of selecting purchase or pooling. So a logit is run on this subset of the entire bank acquisition sample in a manner identical to that of the first logit. (See Table 10)

With regard to the control variables, there were some disparities. The sign on both capital and net income changed from negative to positive. The signs on total assets, equity and relative size of equity all went from positive to negative. The signs on core deposits, interest expense and revenue, and relative size of assets remained the same.

As far as the regulatory indicator variable is concerned, the value of the coefficient remained almost identical. However, the statistical significance of this coefficient value did not hold in the stock-transaction logit model. The relevant test-statistic only yielded a value of .65 compared to the initial logit's 1.95.

As stated earlier, to provide strong evidence that purchase vs. pooling is the appropriate decision and that that decision is affected by these standards, the logit run on stock transactions should have yielded similar results with regard to coefficient signs and significance. This, however, was not the case for all of the control variables. Although the reported coefficient on the all important dummy variable DBEF is positive, it is actually very difficult to ascertain whether anything is going on due to

the strong insignificance associated with the t-statistic. These facts were consistent throughout all of the six logits representing the different definitions of capital and net income. Again, only the first logit is presented.

Keeping in line with the control variable changes implemented in the previous section, a logit on the stock-financed deals is also run with the new and omitted variables. (See Table 11) This same variable-set logit is also run with the dummy variable DCAP. (See Table 12) Both logits yielded positive coefficients on DBEF, although there was no statistical significance in either one. As far as the second logit is concerned, DCAP (the dummy variable representing high and low capital) has a negative but insignificant coefficient. The control variable results do not merit much attention, however there is a significant coefficient on the core deposit variable in the second logit.

TABLE 10
LOGIT MODEL RESULTS

Dependent Variable is PRCHPOOL (1=Purchase, 0=Pooling-of-interests)
Number of observations: 96

VARIABLE	COEFFICIENT	STD. ERROR	T-STAT.	2-TAIL SIG.
C	-1.5305536	1.5401556	-0.9937656	0.3232
DBEF	0.7979416	1.2108573	0.6589890	0.5117
CAP	0.0119983	0.0107977	1.1111927	0.2696
TA	-0.0006017	0.0005270	-1.1416771	0.2568
EQBK	-0.0119145	0.0111186	-1.0715812	0.2869
CORE	-7.905E-05	8.696E-05	-0.9090440	0.3659
INTEXP	0.0111831	0.0061738	1.8113975	0.0736
INTREV	0.0003205	0.0009372	0.3420120	0.7332
NI	0.0032833	0.0101063	0.3248740	0.7461
RELA	-3.4598376	3.3618021	-1.0291616	0.3063
RELE	-0.8817498	3.0388224	-0.2901617	0.7724

Log likelihood -17.732743

DBEF = value 1, before regulation/value 0, after regulation
CAP = capital ratio (of acquirer)
TA = total assets (of both parties)
EQBK = book value of equity (of both parties)
CORE = core deposits (of both parties)
INTEXP = interest expense
INTREV = interest revenue
NI = net income
RELA = relative size, assets
RELE = relative size, equity

TABLE 11
LOGIT MODEL RESULTS

Dependent Variable is PRCHPOOL (1=Purchase, 0=Pooling-of-interests)
Number of observations: 96

VARIABLE	COEFFICIENT	STD. ERROR	T-STAT.	2-TAIL SIG.
C	-2.5825926	1.5331071	-1.6845481	0.0957
DBEF	0.8855413	1.0754763	0.8233946	0.4126
CAP	0.0047729	0.0071636	0.6662657	0.5070
TA	0.0001104	0.0002308	0.4784874	0.6335
EQBK	-0.0001042	0.0081345	-0.6859626	0.4946
CORE	-0.0001042	6.526E-05	-1.5961038	0.1142
NI	-0.0040422	0.0051566	-0.7327213	0.4657
RELA	-2.1004771	1.8825287	-1.1157743	0.2677
MKBK	0.0640269	0.3622590	0.1767434	0.8601

Log likelihood -22.547649

DBEF = value 1, before regulation/value 0, after regulation
CAP = capital ratio (of acquirer)
TA = total assets (of both parties)
EQBK = book value of equity/total assets (of both parties)
CORE = core deposits/total assets (of both parties)
NI = net income/total assets
RELA = relative size, assets
MKBK = ratio of market value of equity to book value of equity of the target

TABLE 12
LOGIT MODEL RESULTS

Dependent Variable is PRCHPOOL (1=Purchase, 0=Pooling-of-interests)
Number of observations: 96

VARIABLE	COEFFICIENT	STD. ERROR	T-STAT.	2-TAIL SIG.
C	-2.1622212	1.6237477	-1.3316239	0.1865
DBEF	1.1445119	1.0880780	1.0518657	0.2958
DCAP	-0.9476714	0.9643015	-0.9827542	0.3285
TA	0.0001305	0.0002123	0.6148479	0.5403
EQBK	-0.0013468	0.0039201	-0.3435688	0.7320
CORE	-0.0001250	5.708E-05	-2.1894093	0.0313
NI	-0.0032948	0.0051306	-0.6422015	0.5225
RELA	-2.1024462	1.8658138	-1.1268253	0.2630
MKBK	0.0627365	0.3633143	0.1726783	0.8633

Log likelihood -22.407541

DBEF = value 1, before regulation/value 0, after regulation
DCAP = value 1, high capital ratio/value 0, low capital ratio (of acquirer)
TA = total assets (of both parties)
EQBK = book value of equity/total assets (of both parties)
CORE = core deposits/total assets (of both parties)
NI = net income/total assets
RELA = relative size, assets
MKBK = ratio of market value of equity to book value of equity of the target

A Trivariate Analysis of the Medium of Exchange

The second way that the medium of exchange impact is tested is through the use of the trivariate multinomial logit. The results are presented in two column form to represent both the decision to select purchase and use cash versus the decision to select pooling and use stock and the decision to select purchase and use stock versus selecting pooling using stock. This three choice selection goes beyond the binary responses tested earlier. Again, this methodology serves as a mechanism to explore the issue of payment mode versus accounting convention. (See Table 13)

The results presented include the coefficients on the same control variables as previously run logits, and their corresponding test statistics. The coefficients on capital and net income, which were negative in the binary logit, were negative in the purchase/cash first column and positive in the purchase/stock second column. The interest revenue and interest expense values remained positive in the multinomial and core deposit and the relative size of assets remained negative. The equity coefficient was positive but turned out to be negative in both columns whereas the relative size of equity was positive but came out positive and negative in the two columns, respectively. Not much can be concluded, however, since none of these control values were statistically different from zero.

The results associated with the indicator variable DBEF will now be addressed. When comparing the choice of pooling/stock with purchase/cash, even though the coefficient was not significantly different from zero, its value came out negative. The coefficient on DBEF in the comparison between pooling/stock and

purchase/stock yielded a positive value even though it too had a test statistic that was not significant.

As in the previous sections, this multinomial logit is also analyzed with the revised right-hand-side variables. (See Table 14) The implemented changes do not appear to have led to any dramatic changes in coefficient significance. Specifically, as with the previous trivariate logit, the value of DBEF when comparing pooling/stock and purchase/cash was insignificantly negative and the comparison between pooling/stock and purchase stock yielded an insignificant positive amount.

TABLE 13
MULTINOMIAL LOGIT MODEL RESULTS
Number of observations: 150

	Purchase/Cash		Purchase/Stock	
	Coefficient	t-Stat.	Coefficient	t-Stat.
CONSTANT	-0.7870	-1.450	-1.2863	-0.901
DBEF	-0.4427	-0.095	0.9377	0.845
CAP	-0.2210	-1.083	0.1496	1.646
TA	0.9425	0.958	-0.3332	-1.014
EQBK	-0.2011	-0.102	-0.1878	-1.728
CORE	-0.3624	-0.937	-0.1120	-1.307
INTEXP	0.5773	0.445	0.1032	2.024
INTREV	0.7831	0.278	0.3502	0.412
NI	-0.5272	0.241	0.3511	0.467
RELA	-0.2066	-0.248	-3.5114	-1.076
RELE	0.1504	0.815	-0.6684	-0.231

DBEF = value 1, before regulation/value 0, after regulation
CAP = capital ratio (of acquirer)
TA = total assets (of both parties)
EQBK = book value of equity (of both parties)
CORE = core deposits (of both parties)
INTEXP = interest expense
INTREV = interest revenue
NI = net income
RELA = relative size, assets
RELE = relative size, equity

TABLE 14
MULTINOMIAL LOGIT MODEL RESULTS
Number of observations: 150

	Purchase/Cash		Purchase/Stock	
	Coefficient	t-Stat.	Coefficient	t-Stat.
CONSTANT	-1.0001	-1.435	-2.4128	-1.600
DBEF	-0.2055	-0.473	0.8228	0.839
CAP	0.2514	-1.343	0.4873	0.838
TA	0.1060	1.511	0.1844	0.874
EQBK	-0.4823	0.395	-0.7153	-0.962
CORE	-0.2421	-0.714	-0.1247	-1.865
NI	-0.1076	0.056	-0.2521	-0.585
RELA	0.4816	-0.061	-2.3212	-1.251
MKBK	.9006	0.172	0.1032	0.284

DBEF = value 1, before regulation/value 0, after regulation
CAP = capital ratio (of acquirer)
TA = total assets (of both parties)
EQBK = book value of equity (of both parties)
CORE = core deposits (of both parties)
NI = net income
RELA = relative size, assets
RELE = relative size, equity

Economic Significance

To truly explore the impact of the decision to select purchase or pooling before and after the regulation, the analysis now goes beyond the statistical results. In an effort to examine the economic significance of this issue, the analysis will now focus on the numerical coefficient on DBEF from the first logit. Recall that DBEF is the dummy variable that takes on a value of 1 before the regulation and 0 after the regulation.

The question that this portion of the analysis will attempt to answer is how much of an effect DBEF has on the probability that a bank will choose the purchase method of accounting. To respond to this question, the numerical probability occurring before the regulation will be compared with the numerical probability after the standards. If the difference between these probabilities is substantial, then it could be viewed as evidence that the accounting convention decision has been economically impacted by the risk-based capital standards.

The potentially economically significant probabilities were calculated mathematically starting with the equation of a logit. The log of the probability of occurrence divided by one minus the probability of occurrence was set equal to a variable, x. This variable represents the mean values of all right-hand-side variables holding DBEF constant. When DBEF equals one (before), this variable is equal to x + .791105 where .7911105 is the coefficient value on DBEF.

The probabilities before the regulation and after the regulation are represented by P1 and P2,respectively. Manipulation of this initial equation led to an algebraic

set-up fit for the calculation of the probabilities. P2 is set equal to e to the x divided by one plus e to the x and P1 is set equal to the same equation but with x + .7921105. The calculations yielded values of .4618538 for P1 and .3333 for P2. Since there is not a drastic difference between the two probabilities according to the calculation, not much can be stated in reference to the economic significance of the regulation and its impact on the purchase/pooling decision.

CHAPTER 8
CONCLUSION

The issue of goodwill within the realm of the risk-based capital standards has been heavily debated by regulators and those representing the banking industry. Regulators claim that by eliminating the impact of intangible assets, capital ratios will reflect a clearer as well as safer financial position. Bankers counter with the fact that this regulation and its treatment of goodwill could affect the bank merger market. Determining whether there is such an "effect" has been the objective of this study. This dissertation did not seek to argue that there is an impact, or even to argue what that impact is. Its purpose has been to provide an empirical response to the question that bankers and researchers have asked in oral and written responses to the standards and recent articles, respectively.

In any empirical work, it is important to address how or whether or not the issue or the response to the issue affects the real sector. To begin, any regulatory issue can have some effects on economic markets, whether directly or indirectly. The question here is if this regulation impacts bank mergers. If there is an impact and that impact is harmful, then real sector effects could be experienced if there is acceptance of the theory that acquisitions provide real economic benefits. It could however, also be that there may be an impact on bank mergers that is insignificant enough to not spill

over into the real world. Specifically, the statistical and mathematical results of this dissertation do not appear to provide clear support that the goodwill component of the risk-based capital standards has affected economic market participants in general.

The results from the first four logits can be interpreted in the following manner. This sample of acquisitions implies that for banks participating in merger activity before the risk-based capital regulation, there is a higher probability that purchase accounting would have been used before the standards, or that after the standards, there was a lower probability of selecting the purchase method. The argument can also be expressed from the following perspective. A bank interested in a potential merger or acquisition would be more prone to use the pooling-of-interests method after the risk-based capital standards, and would be less likely to choose that method before the regulation.

Keeping in mind the frailties associated with providing answers to questions based on empirical data and statistical analysis, the results must be interpreted with care. For example, when viewing this issue with a more precise set of variables, some of the statistical significance is lost. It could also be that there has been a shift in the preference for pooling over time. There could even be other factors that are driving these results. Therefore, I would summarize the effect of this portion of the output by stating that the initial test in this paper provides some evidence that the bank merger market may have been impacted by the goodwill component of these regulations.

As far as the next set of logits is concerned, when viewing those results

associated with the medium of exchange, the strength of the previously discussed evidence is challenged. Since the statistical output does not provide significant coefficients that correlate with that of the standard logit, doubt now arises as to whether the decision to select purchase or pooling is impacted by the risk-based capital standards. Questions also arise as to whether or not it is the accounting convention or the method of payment that is the relevant issue in a bank acquisition decision. The insignificance associated with the logit on stock transactions and the trivariate logit result cloud the issue of whether or not the bank merger market in aggregate has been affected.

It appears that the evidence displayed here has led to mixed results overall. It is the opinion of this writer that the lack of strong evidence linking these standards to a bank merger impact is right in line with possible real sector effects. There is no question that the goodwill component of the standards is a relevant issue that must be confronted and dealt with by acquiring banks, but I would conjecture that it could affect a bank, but not necessarily all banks. Stated another way, there can be an impact, but not such a large impact that it would change the entire bank merger market. To sum, the existence of this goodwill rule is a necessary but not a sufficient condition for real effects. Thus, there is definitely an "implication" if not necessarily an "impact".

For bankers, the results of this paper imply that the risk-based capital standards do present a pertinent issue through its treatment of goodwill. However, there is no support for the fact that this issue will impede merger activity, a point argued in

several written articles and responses. As far as regulators are concerned, according to the information presented here, there appears to be no reason for them to be motivated to do anything about the goodwill portion of the standards. However, there could still be a reason for regulators to take the complaints of the banking industry seriously. Given all of the many provisions set forth in the risk-based capital standards, some meaning should be extracted from the fact that there was so much negative reaction concerning the goodwill deduction. Regulators should interpret this fact as a signal of just how important acquisition activity is to banks, and subsequently should regulate accordingly.

Given the fact that these capital standards actually went into full effect during the writing of this dissertation, this topic is quite current. For this reason, other empirical works either cannot be ascertained for comparison with this work, or, this writer has yet to come in contact with related writings. Thus, it is with relative certainty, that a claim is made that this is the only work addressing this issue.

Previous exposition has alluded to the fact that this dissertation seeks to answer the question of whether or not there has been an impact on the market for bank control as a result of these standards. This writer decided to focus on the accounting choice and the medium of exchange to represent this "impact". Subsequent writers could set out to answer this question by utilizing similar or even different variables to measure a change. Future writers could even continue to use the accounting method choice and payment mode as dependent variables, but use other statistical methodologies.

This dissertation serves as only a first step in answering the question of the effect of the goodwill component of the risk-based capital standards. It also provide bankers and regulators alike with some academic evidence to address this issue more insightfully. Again, since this is a topic whose chronology forces it to be current, many related works could stem from it. It can be the catalyst for this issue to be examined beyond the oral and written debate that now exists between regulators and bankers.

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I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

Mark Flannery, Chairman
Barnett Banks Eminent Scholar
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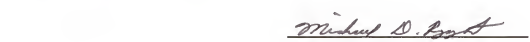

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This dissertation was submitted to the Graduate Faculty of the Department of Finance, Insurance and Real Estate in the College of Business Administration and to the Graduate School and was accepted as partial fulfillment of the requirements for the degree of Doctor of Philosophy.

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